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Product data mastery simplified

How to align your product data with organizational strategy to seize emerging opportunities in a rapidly evolving business and IT landscape

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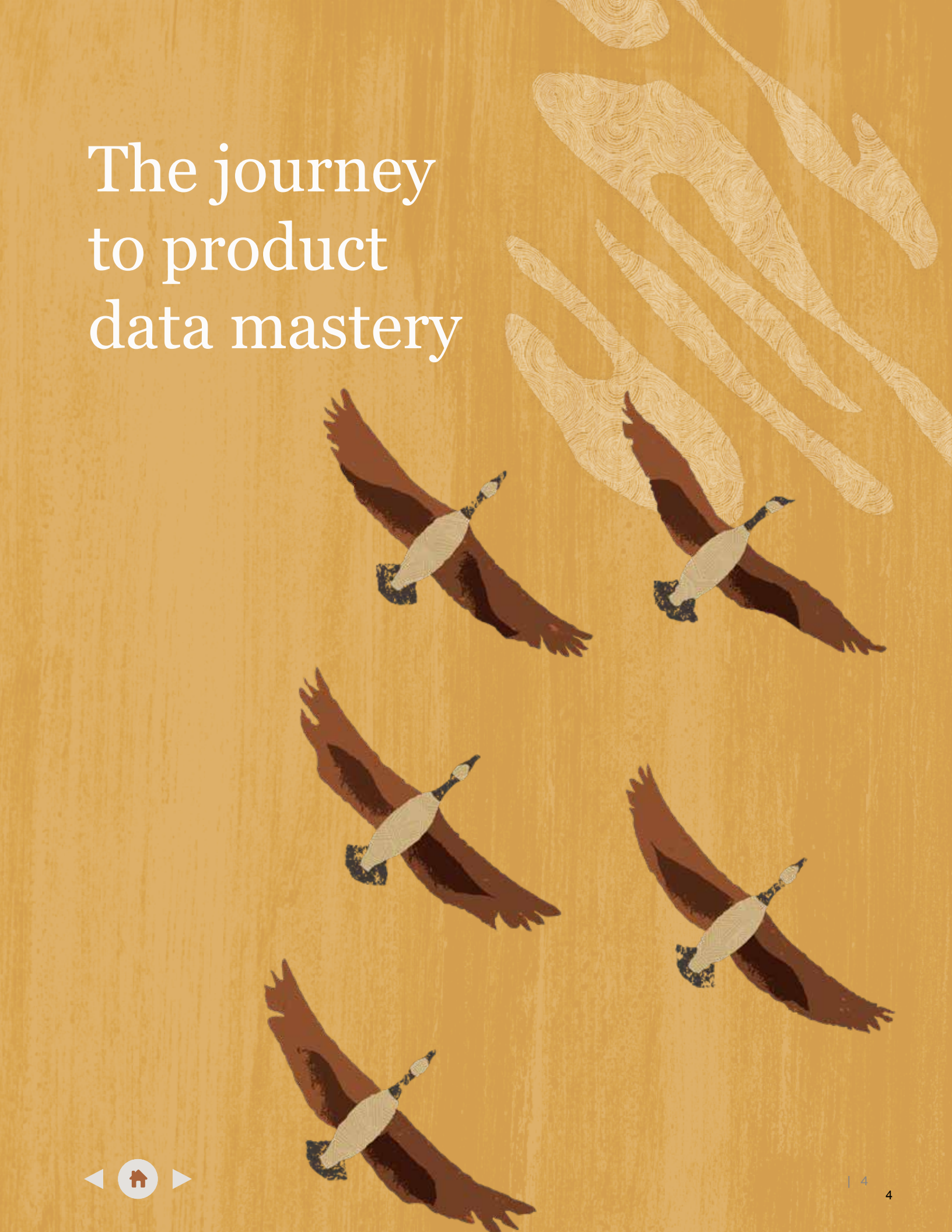
The journey to product data mastery



The path to product data mastery starts with enlightenment, then alignment

You must first learn to respect product master data...

Let's begin with a simple explanation of "product data mastery." Everyone in your organization relies on accurate and timely product information to make decisions daily—from executives developing organizational strategy to end-users driving throughput in development, marketing, supply chain, and operations.

An organization's competency to make the right product information available at the right time to the right people for the best possible business outcome is termed product data mastery. It is a strategic approach to managing product information that is enabled by executive sponsorship, organizational alignment and in part by the enterprise solution set called product master data management (MDM). Some business and industry thought leaders interchangeably refer to product MDM as product information management (PIM).

No matter the label, the importance of accurate and timely product information is not a controversial or groundbreaking concept. So given this generally understood business need, why do many organizations allow such valuable intellectual property to be managed haphazardly?

The reason is simple – organizations often lack product data mastery, a troubling gap in their business models. It is an underlying condition masked by symptoms like excess inventory, late to market, high procurement costs, or inaccurate demand forecasts. There is no unified focus on aligning product data with the organization's business needs and strategy. Instead of addressing this fundamental issue with a formalized approach, companies spend resources fighting the effects and miss the long-term opportunity made possible by product data mastery.

Thus, to start down the path of enlightenment, then alignment, organizations must first address the six C's

1 Complexity

2 Commitment

3 Culture

4 Cloud

5 Compliance

6 Collaboration

Complexity

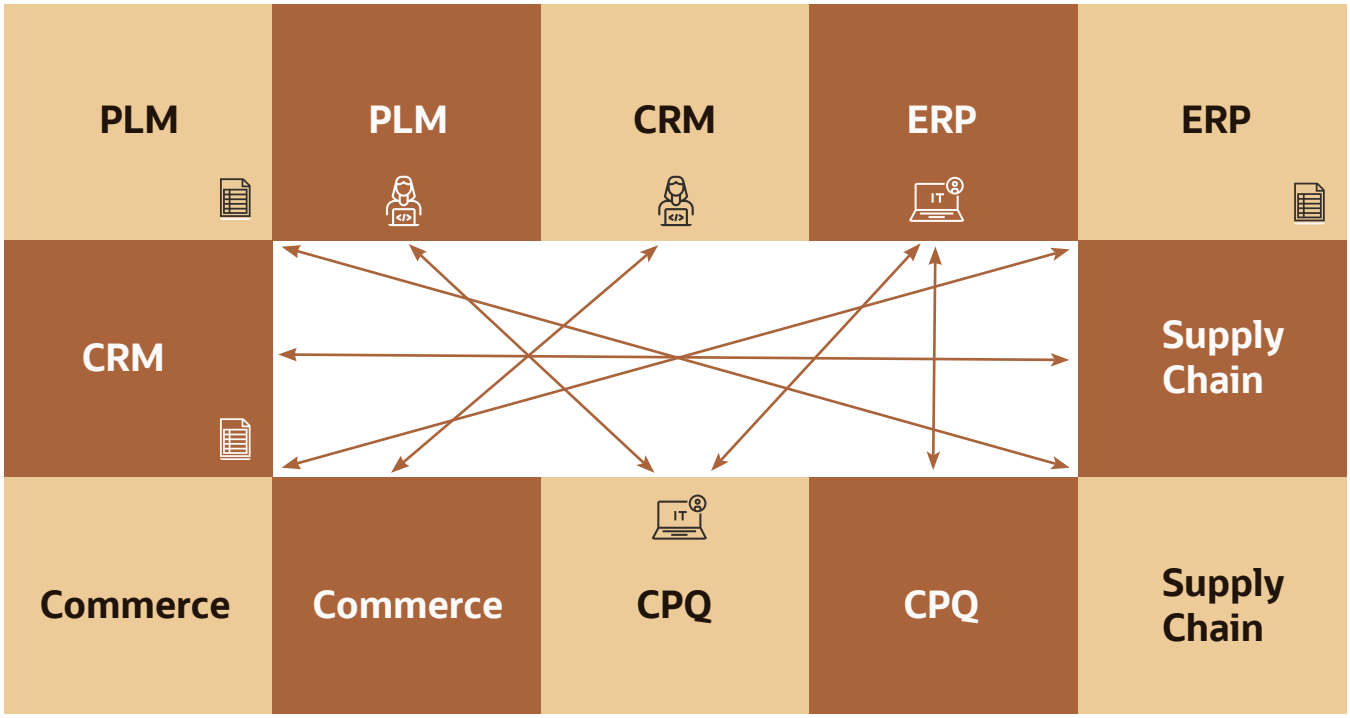
Product data mastery concept #1:
We must all understand and discuss the information we use every day.

Although everyone uses product information, few people have visibility into its full lifecycle. Key stakeholders often don't know its source, how accurate it is, or how to increase its value. This lack of visibility is due to the many disparate enterprise IT solutions, and corresponding business functions, that author and consume product data including:

- **Product Lifecycle Management (PLM)—** for product development
- **Enterprise Resource Planning (ERP)—** for operations and commercialization
- **Configure Price Quote (CPQ)—**for sales and order management
- **Customer Relationship Management (CRM)—** for customer service
- **Omni-channel Commerce Solutions—**for cross channel sales
- **Analytics and Reporting—**for enterprise visibility

To keep data in sync between these solutions and business functions, organizations often rely on manual data entry, spreadsheets or homegrown solutions.

Attempting to align the solutions and business processes that use product data is a daunting task without the right solution in place



These “Band-Aid” solutions to governing product information are well intended; however, they cannot keep up with the rapid pace of today’s global economy. As a result top-line and bottom-line revenue are impacted because order-to-cash, inventory management, business planning, customer service and other critical business processes are hamstringed by bad data. Most organizations understand this; however, when discussions about product information management, data quality, latency, transparency, or storage arise they are quickly relegated to the IT organization. Referencing the lexicon below, it is easy to see why this happens.

How do we address these issues and include everyone’s input in a product data mastery discussion? Like many business challenges, start with a specific scope. Pick an area in which to focus that delivers quick success in a relatively short period of time, like problematic sales channels or suppliers.

Discussions of product master data can introduce a broad array of issues

Commitment

Product mastery concept #2:
The organization must commit itself to managing a clean and accurate product master record.

Why focus on product master data as opposed to other areas where master data management solutions can have impact? The reasons are simple:

Your product record IS your company.

- Product data is valuable corporate intellectual property that must be respected, secured, and managed at all times.
- Product data is rich data, with valuable structured and unstructured content that should be constantly mined and analyzed to gain competitive advantage
- Product data is the output of your product development process and an enabler for first-to-market, right-to-market advantages
- Product data is expensive, and thus should be treated with reverence. How much does it cost your organization to develop a finished, commercialized product? How many stakeholders are involved in this process? How long does this process take?

Product data has a lifecycle that is unique.

- Product data passes through multiple departments, business functions and systems, both internal and external to the organization.
- Product data frequently has multiple and unique lifecycle states, revisions, structures, and methods of dissemination.

Product data has impact on all your key supply chain processes.

- Product data impacts “Buy-side” processes—i.e., how your organization manages spend when purchasing inventory.
- Product data impacts “Sell-side” processes—i.e., how your organization commercializes a product and gets it into the proper channels for sale.

Product data has impact on your operational efficiency.

- Product data impacts “Inside” processes—i.e., how your organization manages data internally; providing the right information, to the right people at the right time to maximize operational efficiency.

Product data is a key component of an evolving business landscape.

- Today, as much as 60% of manufacturing is executed by third-party outsourced manufacturers or Contract Manufacturing Organizations (CMOs)
- By 2019, 50% of supply chains will have benefited from digital transformation (DX)*
- By the end of 2018, 90% of manufacturing supply chains will use B2B commerce networks as the dominant collaboration tool for demand,

supply, service, and new product development.*

- By the end of 2019, 90% of manufacturing supply chains will use cloud applications within supply chain fulfillment to reduce complexity and increase speed and visibility.*

Most importantly, proper management of product master data can provide a "quick win" for all!

- The continuing evolution of cloud, mobile, analytics, and Internet of Things (IoT) architectures means that product data is more distributed and complex than ever. As with most business challenges, this also creates a unique opportunity. More focus on how product data is managed will deliver higher value.
- With nearly every industry offering more product choices, in more regions than ever before, product data is growing exponentially. Organizations that can meet these challenges faster than competitors will gain advantages in the marketplace.
- Effective management of product data provides a great "on-ramp" to meet these twenty-first century business challenges.
- Product data can be securely managed in the cloud and enable:
  - Management of hybrid cloud and on-premise environments
  - Global and omni-channel commerce requirements.
  - Evolutions to mobile, IoT, and cloud platforms

* From IDC FutureScape: Worldwide Supply Chain 2017 Predictions; November 2016

Culture

Product mastery concept #3:
Culture is more important than technology or process.

With so much at stake, it is clear that managing a clean and accurate product master record is not a project that should be "thrown over the wall" for IT to manage. Certainly IT is a key sponsor; however, business leaders must take a leadership position in building the roadmap to product data mastery. It is the business and executive leadership teams that rely on product data daily. They know what information they need, what content is currently available, and what content is lacking. From a product data mastery perspective, a great first step is to get all the key constituents in the same room to discuss the "as-is" product information landscape.

A cross functional team is required to examine how product master data impacts the entire organization

To manage this diverse group of constituents, the following team leaders should be established:

- A **Chief Data Officer** who will work with the business leaders to gather information, map processes and set goals.
- An **IT Sponsor** who can provide guidance around the organization's overall master data management (MDM) strategy. They should provide information around technology standards, existing platforms, and the technology roadmap.
- An **Executive Sponsor** that can align the product MDM strategy with corporate strategy and approve investment decisions

Cloud

Product mastery concept #4:
Champion your organization's Cloud strategy.

Product master data impacts many business processes and platforms. However, cloud is a topic that requires special focus. Not since the arrival of the internet has such a dramatic architectural shift occurred in the IT landscape. Organizations are quickly adopting cloud technology for enterprise resource planning and supply chain activities to drive agility, reduce costs, increase scalability, and foster innovation. It is important that product data mastery initiatives are aligned with the organization's cloud strategy.

Cloud strategy must be front-and-center when aligning your product master data strategy

Not only will product data mastery enable your company's cloud transition, but a solution that establishes a single source for trusted product information can also be one of your organization's first applications in the cloud. This allows the business to stage the cloud transition while migrating from on-premise applications. As other applications are brought into the cloud, your workforce can be assured that they are utilizing clean and timely item data.

Architecturally, a cloud-based product master data management solution makes sense because it also provides portal and service-oriented architecture (SOA) access for the entire supply chain, without a long implementation lead-time. By removing many of the common barriers associated with on-premise implementations, a cloud-based product MDM project can be implemented and demonstrate value in as little as six months. To ensure you achieve those benefits as you start your journey into the cloud, work with a solution provider that supports a fast, flexible and safe cloud deployment that includes:

- The ability to drive key processes with clean and timely product master data
- An agile infrastructure that allows you to quickly deploy new services and scale to meet demand
- Easy-to-use user interfaces, administrative functions, analytics, mobile applications and social collaboration tools that can be accessed anywhere at anytime
- Completeness and connectivity with mobile devices, third-party solutions, IoT devices, SOA and radio-frequency identification (RFID)
- Best-in-class security such as encryption, virus scanning and whitelist support to protect your product data and other intellectual property

Compliance

Product mastery concept #5:
Understand the information compliance requirements for your organization

Today all industries must operate under hundreds of industry and governmental regulations. Examples include:

- High tech and industrial manufacturers that must comply with the Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) and Restriction of Hazardous Substances (RoHS) directives
- Retail and Consumer Packaged Goods (CPG) companies that must follow industry guidelines for how their products are labeled and packaged
- Life Sciences organizations must undergo rigorous FDA audits and global market entry approval processes

As you examine your product information ecosystem, understand what information must be specifically managed to meet compliance requirements. How is this content governed and collected today? Where is there room for improvement?

Collaboration

Product mastery concept #6:
Collaborate to unlock the unharnessed potential of your product data!

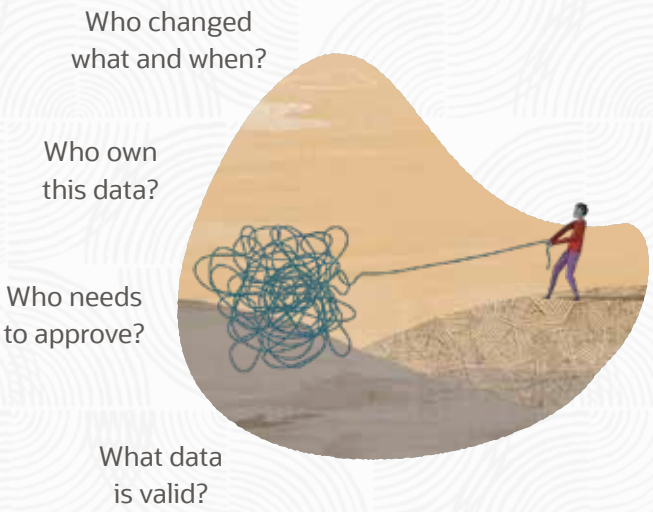
Regardless of the business function, common gaps in product master data must be identified. Foster a culture of collaboration by identifying organizational best practices for:

- Data Management
- Data Governance
- Data Security
- Data Reporting
- Data Integration

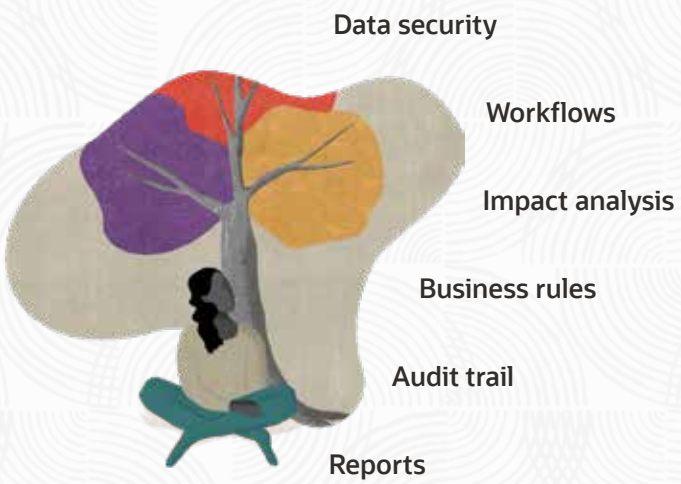
As you collaborate with your peers, don't go it alone!

- Use the Glossary included in this whitepaper to level-set your knowledge about common product data mastery subject areas.
- Use this Checklist to track your progress towards product data mastery
- Engage with a trusted business partner that has years of MDM experience and understands how product information has evolved.

What is your "as-is" state?



What is your desired "to-be" state?



Each stakeholder will have different perspectives on product information. In the following sections of this guide, we will examine varying paths to product data mastery based on these diverse experiences.

Choose your path to product data mastery

By business driver

There are hundreds of micro business processes that are impacted by product master data. In this path to product data mastery, we will focus on a few encompassing macro business drivers that have impact across the business and IT landscape.

Item mastery for the value chain

"Our organization struggles with creating and managing item information. We do not have efficient processes in place for defining, governing, changing, and publishing item master data to disparate platforms across the enterprise."

Path-to-cloud

"Our organization is undergoing a cloud transformation that will migrate our ERP and Supply Chain Management applications to the cloud."

Omni-channel commerce

"We go to market in several ways, so we need to standardize business processes that publish vital product data across global web, mobile, print, and brick-and-mortar sales channels."

Product commercialization

"We are too slow to launch our products into the marketplace because our product information is so complex and changing rapidly that we can't find the right data fast enough.

Contract manufacturing

"Contract manufacturing is the most efficient way to run our business; however, we're not seeing all the benefits we expected from our CMO partnerships."

By role

Your path to product data mastery will vary based on your role within the organization.

"I'm an Executive that needs to understand how product data mastery will help improve my bottom-line / top-line results and ultimately help my business become more competitive."

"I'm in the IT organization, and I need to understand how product data mastery will increase my customer satisfaction and help me meet ever increasing data growth demands."

"I work in Product Management, and I need to understand how product data mastery will enable me to be first-to-market and right-to-market."

"I work in Operations and Supply Chain, and I need to understand how product data mastery will help my internal operations and external supply chain run more efficiently."

"I work in the Procurement and Inventory Supply Chain, and I need to understand how product data mastery will reduce my inventory spend."

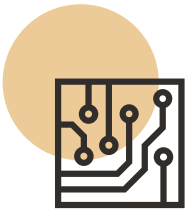
"I work in Product Marketing, and I need to understand how product data mastery will help me position my product in a rapidly changing world."

By industry

Business drivers for clean and accurate product data are applicable across almost all industries. Here are a few examples of market sectors that rely on product information for mission critical business processes.

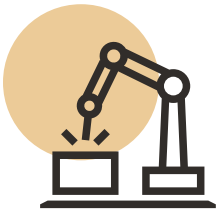
Life sciences

Companies in life sciences, such as medical devices and pharmaceuticals, have unique government mandated requirements around how product information is tracked, labeled, and audited. Contract manufacturing also poses a unique product information challenge for these organizations.



High tech

The high tech industry demands constant and rapid innovation. Thus, high tech manufacturers rely on rapid ideation, streamlined design-to-release processes and outsourced manufacturing to gain right-to-market, first-to-market advantages.



Industrial manufacturing

Companies in industrial manufacturing manage complex supply chains, massive inventories, global production facilities, outsourced manufacturing and multiple enterprise platforms that must all operate in sync to successfully bring innovative products to market on budget and on schedule.

Retail

Retail organizations must have laser focus on providing a great customer service experience with timely and accurate product information. They must provide consumer access to their products through multiple sales channels like online, catalog, brick and mortar, and mobile.

Consumer packaged goods

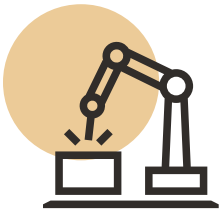
Companies in the CPG industry must centrally manage and publish their massively diverse product information, including product attributes, packaging data, images, catalogs, trading partner information and multi-language content.

By success story

Learn how your industry peers have used product data mastery to gain quantifiable business benefits.

A global pharmaceutical company navigating through a complex ERP migration and consolidation processes as part of their aggressive global M&A strategy.

A consumer products company struggling to meet the demands of running a modern supply chain with an outdated ERP platform.

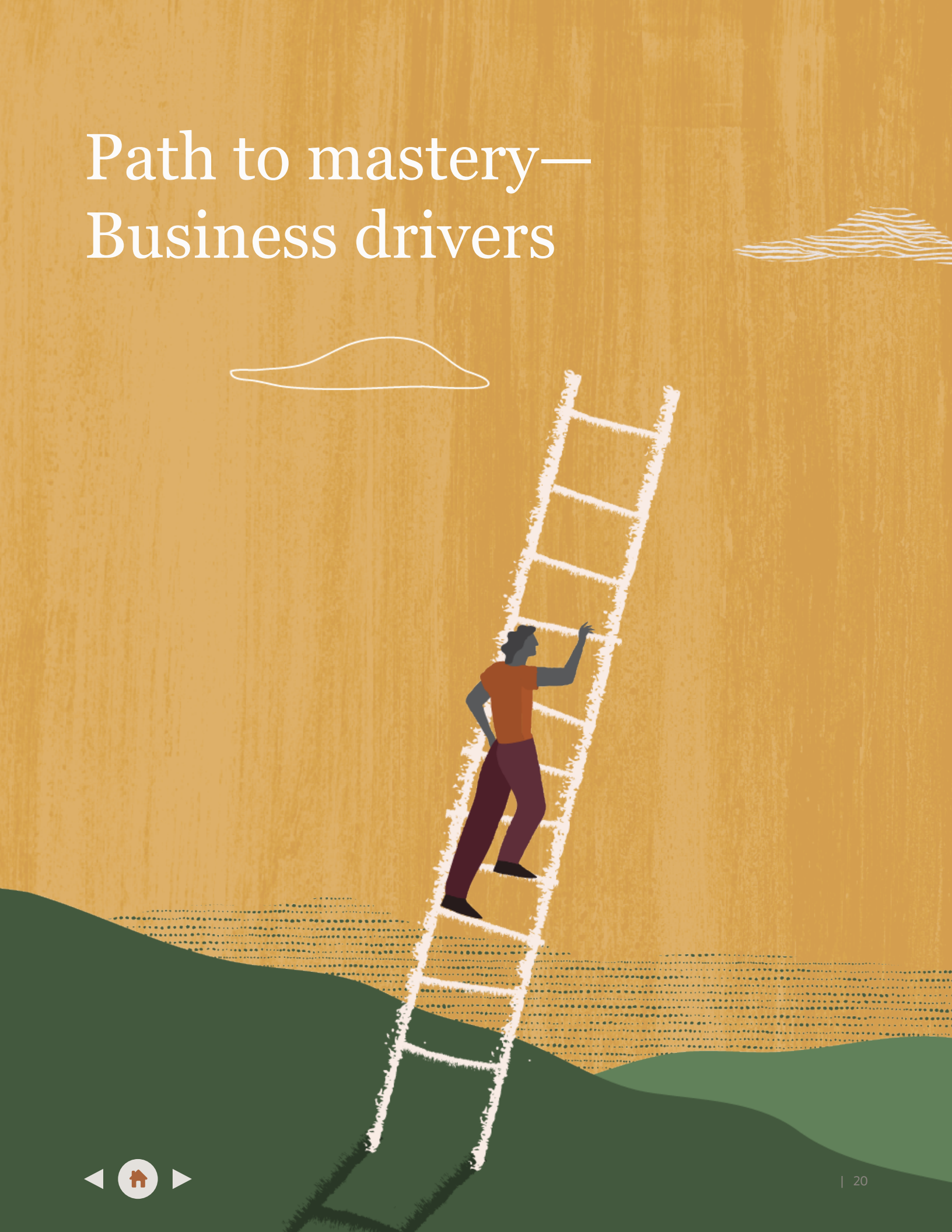


An industrial manufacturer that needed to reduce time-to-market, meet customer mandates and have full alignment of their product lifecycle management processes from concept-to-retirement across their enterprise.

A consumer products company challenged with delivering a consistent customer experience across multiple sales channels.

A high tech retailer that needed to tame chaotic new product introduction lifecycle and retail management processes.

Path to mastery—Business drivers



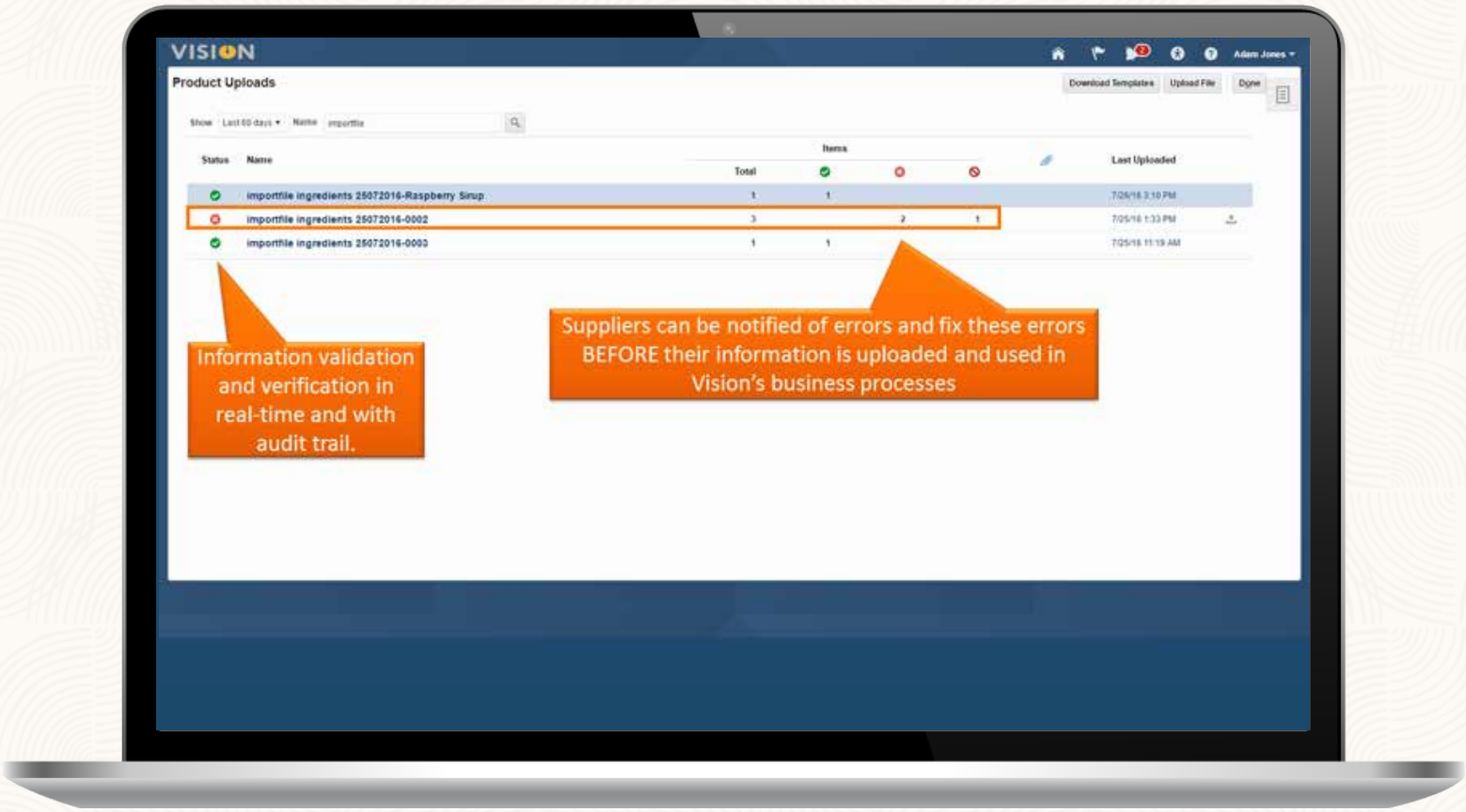
Item mastery for the value chain

How is your item master data authored today?

Item master data typically comes from a variety of disparate sources throughout the enterprise - from internal stakeholders that are part of the product development process, to procurement professionals that enter inventory data. Additionally, external suppliers may provide a significant bulk of your product and inventory data, or you may import data from external data pools.

A simplified item master provides a unified environment for all key stakeholders, both internal and external, to enter item data. The first step in enabling this process is implementing a single hub solution where data can be ingested through a variety of methods. An open cloud-based portal is ideal since it enables data to be uploaded from anywhere, at any time, from any device, using any process. For example, suppliers require a simple, easy-to-use platform to upload and validate inventory information for products that your organization purchases.

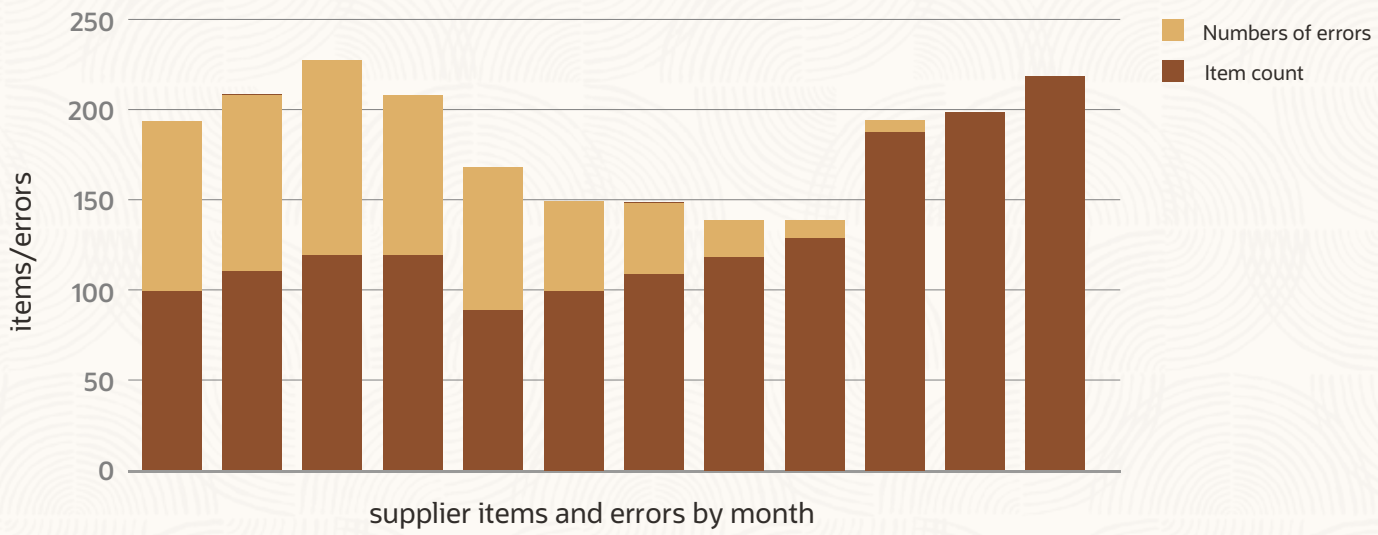
Provide suppliers with an easy-to-use cloud / web-based portal to upload content



Providing suppliers with this functionality and the ability to properly format and error-check their data can remove significant workload from your supply chain professionals, who otherwise would have to manually enter and verify this data.

Provide suppliers with an easy-to-use cloud / web-based portal to upload content

Self-service suppliers items and errors



Other examples of streamlined item creation include:

- A catalog uploaded via automated web-service processes from a trading partner that provides Manufacturing, Repair and Operations (MRO) items.
- A new item creation workflow that guides users through the process of introducing a new item
- A copy or inheritance operation that allows users to copy the foundational product information from an existing item or item class onto a new item

How do you validate item data for completeness and accuracy today?

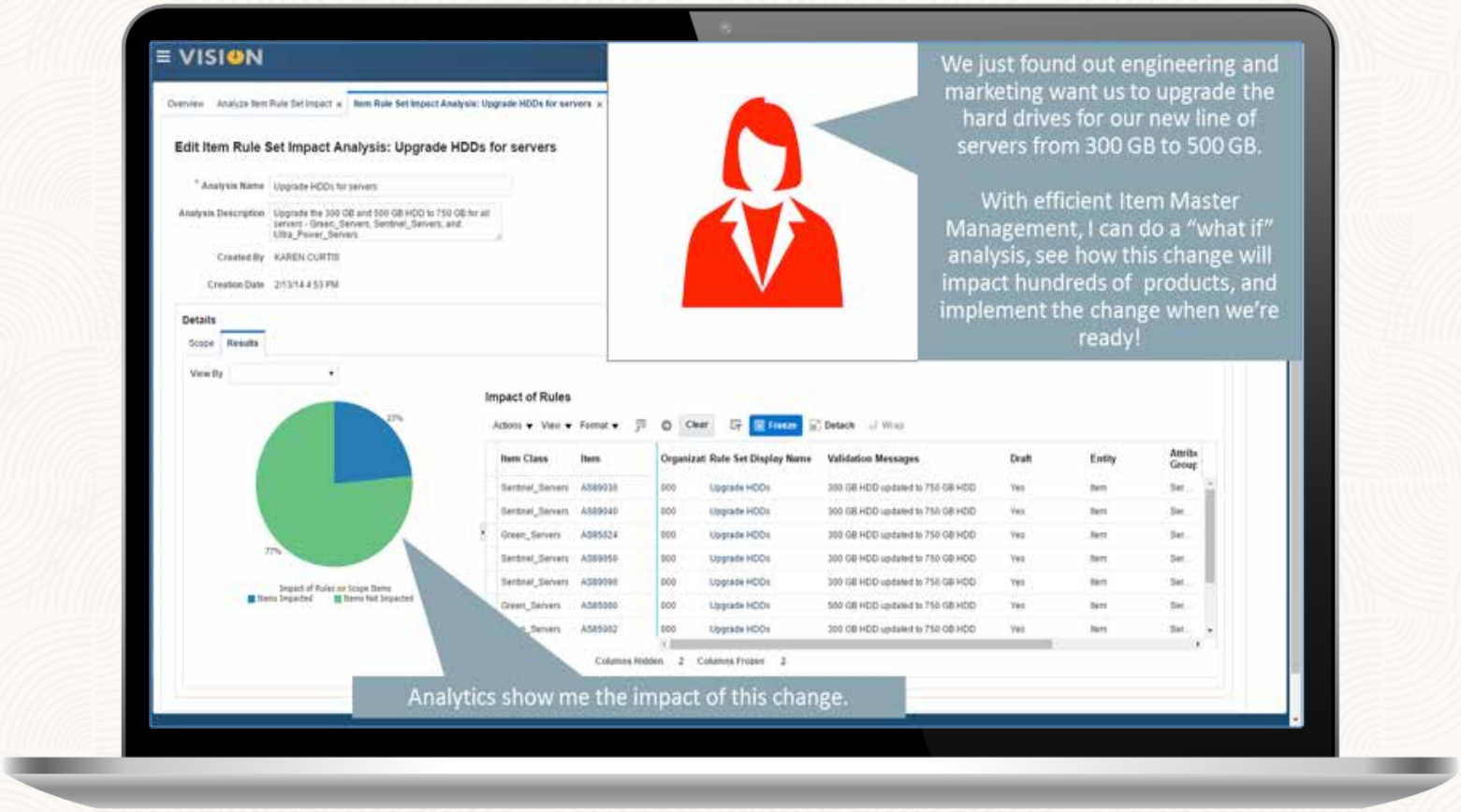
During all data creation and ingestion processes, data quality should be front and center at the start of the process and throughout the item's lifecycle. Here's a simple example that shows how easy it is to introduce errors when defining product information. Take a product that has:

- Five different product attributes that each must be set uniquely
- Each attribute has a unique 3 choice drop-down menu pick
- This results in 243 possible combinations for how these attributes can be selected!

Given the amount of variability that can exist at item creation and throughout an item's lifecycle, data quality should be built into all item lifecycle phases. This means that throughout the item ingestion, creation, approval, change, publication, and de-commissioning process - data quality is continuously checked and verified for completeness and accuracy. Because product data is constantly in flux, data quality should not be viewed as a one-time event that repairs all quality issues in a single operation. Instead, it should be a configurable, flexible process that can be deployed and changed to meet the needs of the business.

Data quality and integrity must also be analyzed when product data needs to be changed in bulk. This is a very common use case in which potentially thousands of items must have their information updated due to a shift in business operations. When this happens, the business must pivot quickly to rapidly update and publish item data. This is another area where data quality checks and validation are mission-critical.

A typical industry use-case

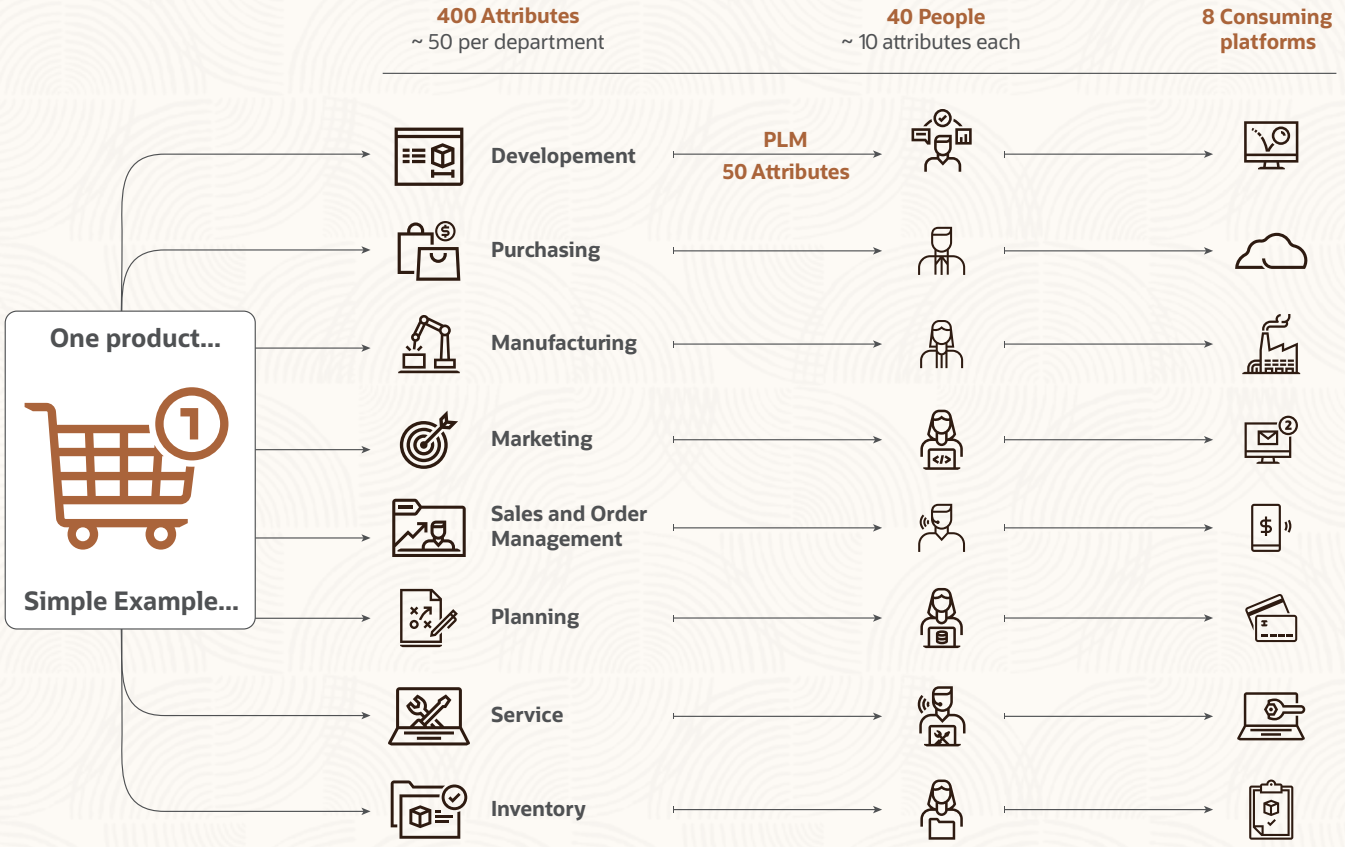


How do you manage the governance of item data and changes over time?

It is important not to confuse data quality with proper information governance and change control. Data quality can be used to check for errors such as incorrect units, missing data, conflicting data, improperly executed calculations, etc. However, there is often a human element that must be involved in the creation and approval of new product data.

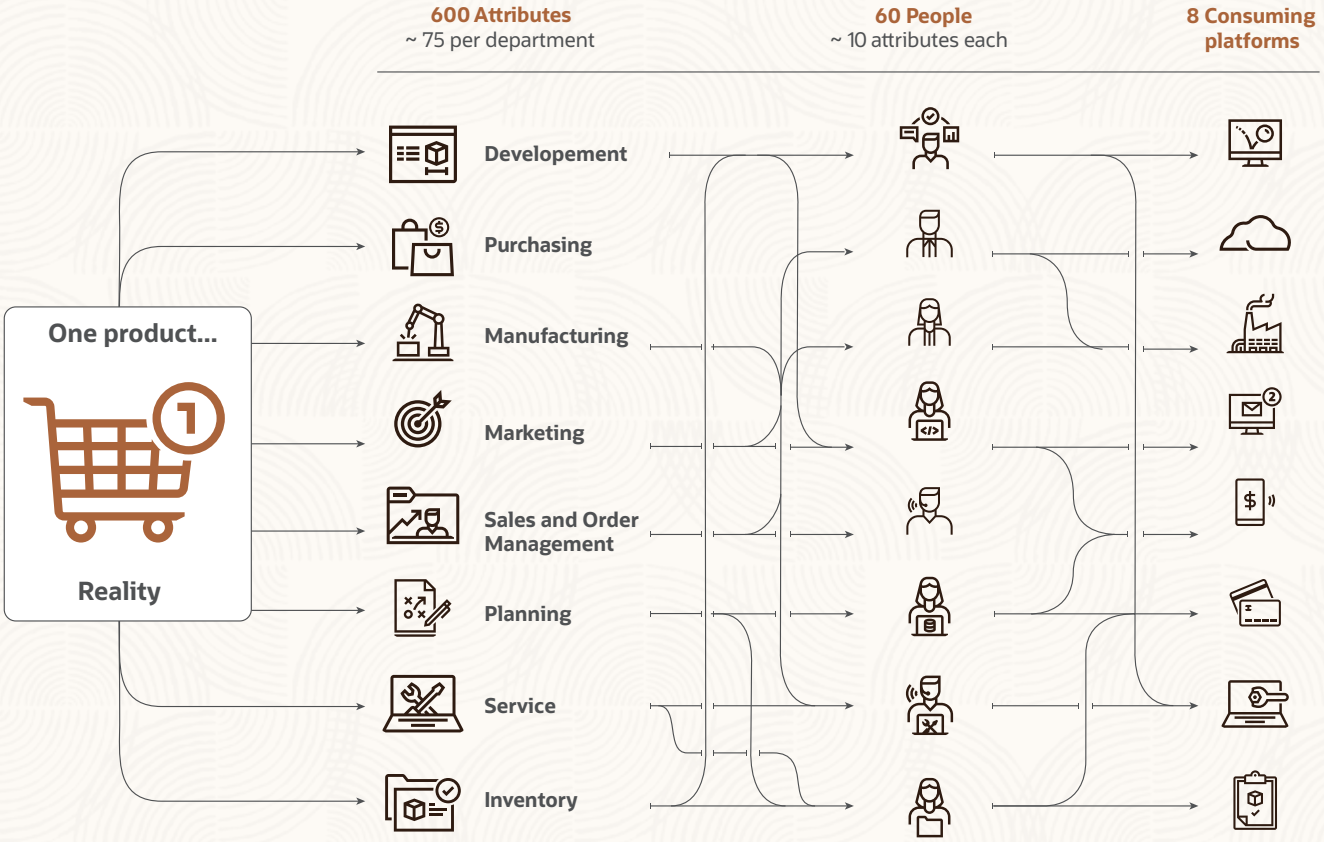
It is not uncommon for there to be over 500 attributes that are required in the definition of a single product. Add to that the number of systems that must often consume this information and that each system often requires its own unique set of attributes, and you've got a recipe for potential disaster. As shown in the illustration below, even with a **simple** example of a product with 400 attributes, with 40 stakeholders working on item master data, the statistical probability for error is extremely high:

Even in a simple process, the statistical opportunities for error are huge!



Note, this is a simple example. A more complex/ realistic example shows how this business process typically operates. In most cases, there will be cross-pollinization of information between individuals, more data and additional consuming platforms as shown below:

In the real world, data flows across organizational boundaries



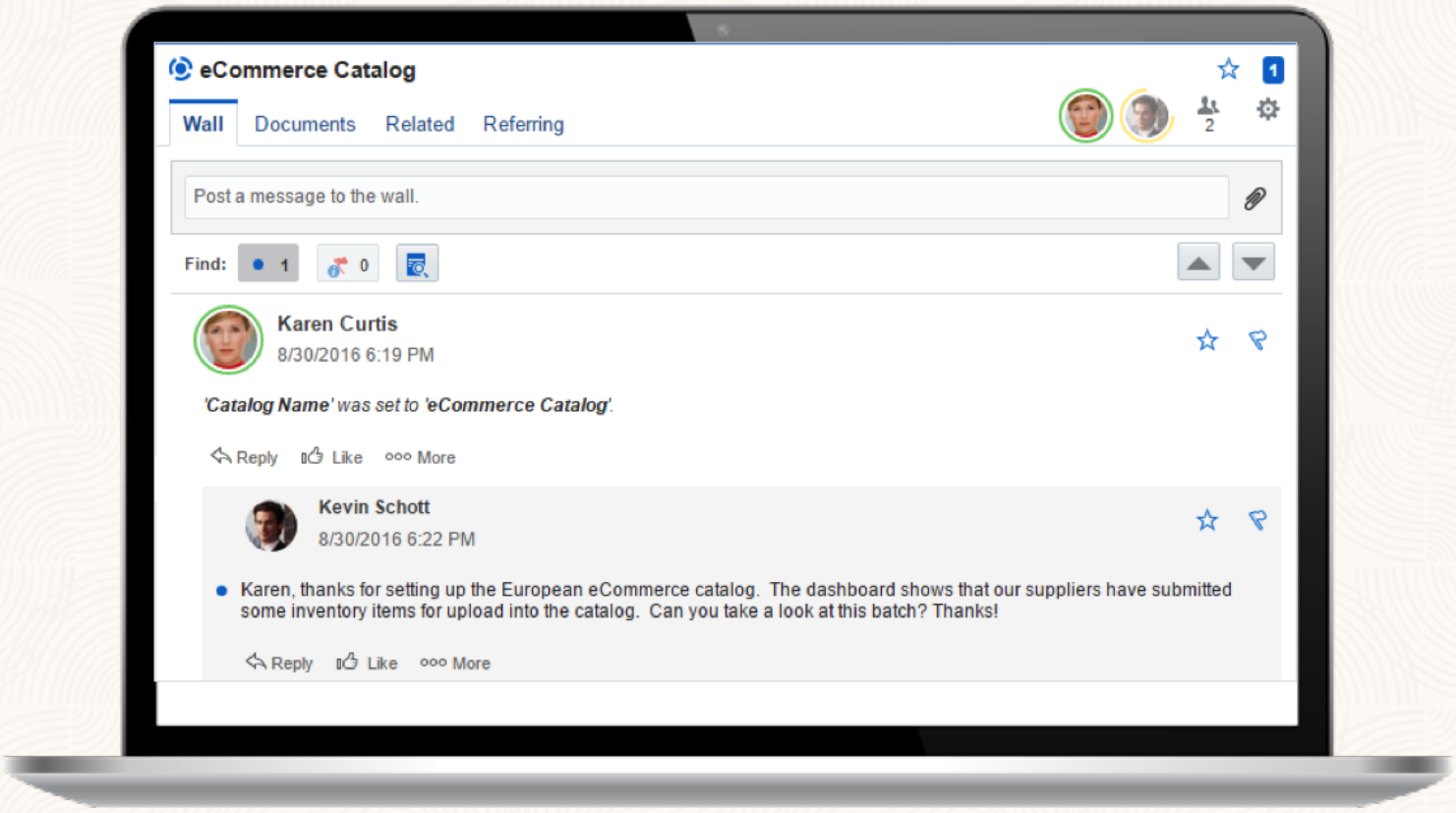
Finally, yet another layer of complexity is added when product content must be varied by region. In one example, an organization manually tracked and distributed a spreadsheet with 40 tabs and 550 fields to track new product information. The manual tracking of this data in the spreadsheet lead to errors, data latency and information security issues.

So how do we address this seemingly impossible task of managing so much information in a distributed environment? The solution is a data governance strategy that not only manages who/ what provides item information, but also monitors the progression of product data completeness.

The ability to distribute work throughout the organization, so that key stakeholders can provide the right information in a timely matter, is mission critical. This also brings into play issues of security, validation, and collaboration. Human validation and collaboration is important. While data quality algorithms can certainly check for the completeness and accuracy of data, there is often a level of collaboration between people that needs to occur to fully develop a product or service offering. This is where solutions such as web-based cloud portals, collaborative workflows, integrated social networks, and analytics can aid in the decision-making process.

A single, purpose-built item master on the cloud streamlines the authoring and publishing of item information for the entire value chain

Integrated social networking helps users collaborate around specific business processes



How is the publication of item data to consuming solutions and business processes managed today?

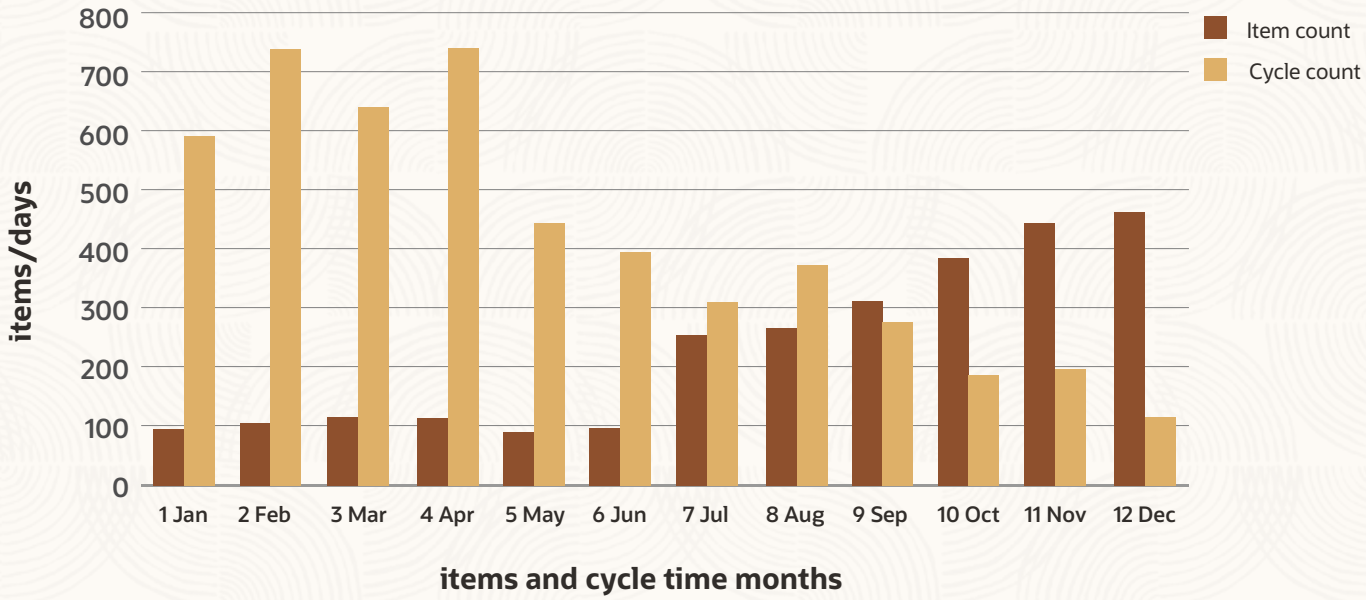
As illustrated above, timely publication of accurate item data is the ultimate goal of Item Master for the Value Chain. Without an item master strategy, data is often published manually in various consuming platforms such as ERP, CPQ and e-commerce applications. The potential pitfalls of this approach are fairly obvious: plenty of opportunities for errors, data latency, and lapses in security. Additionally, consuming platforms (for example, ERP solutions), are not designed to allow end-users to quickly enter and error-check item master data. They do not provide the user interface, governance, collaboration and workflow required to effectively manage an item master.

There are also many benefits to a purpose-built item master solution that may not be quite as obvious. For example:

- Organizations that are moving to the cloud can migrate their item master to the cloud as a first step to implementing a cloud ecosystem.
- As other solutions migrate to the cloud, the item data will be cleansed and ready to be published to those consuming applications.
- Clean and accurate item master data enables more accurate analytics and can also speed item creation time and increase item throughput as illustrated below:

A strong competency in product data mastery drives more efficient reporting

Cycle time/# Items created

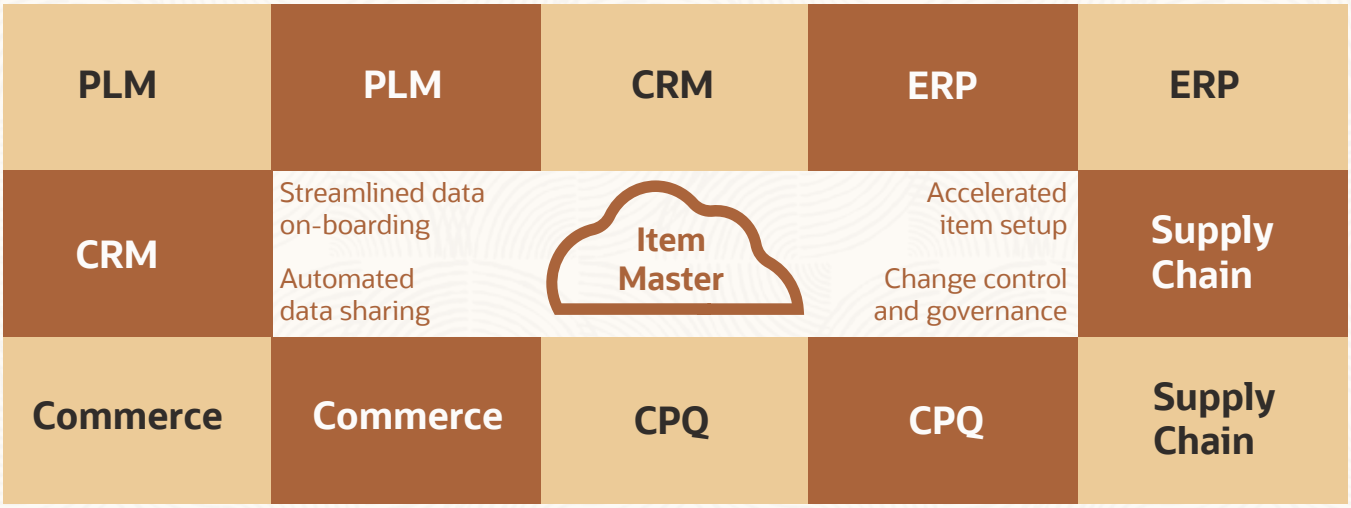


Establishing a single item master for the value chain can drive visibility and efficiency gains

Implement a solution that enables all the key areas of maintaining a clean and accurate item masterfor the value chain. The solution should:

- Streamline product upload to gather information from any source
- Enable rapid product setup with configurable templates, guided workflow and efficient collaboration.
- Establish change control and governance to ensure accountability and enforce best practices
- Share complete and consistent data across cloud and on-premise applications.
- Continuously validate the completeness and accuracy of data throughout all of these processes
- Be rapidly deployed within six months to achieve significant business value

A purpose-built item master for the value chain provides a single source of truth amongst disparate supply chain applications



Summary—Best practices

The required consistency, flexibility, and speed needed to support a unified item master is enabled by product data mastery. Best practices include:

1. **Review item records**—Review item definitions from new entities arising from mergers and acquisitions, new facilities, new partners, etc.
2. **Standardize item definition**—Determine common data attributes and definitions. Facilitate stakeholder collaboration using secure social interaction
3. **Establish data governance**—Define business rules including validation, classification, change control processes and approval routings.
4. **Incorporate new items**—Add products from new entities to master and centralize subsequent data management following defined governance best practices
5. **Propagate product information**—Refresh item data in new entities with master records and automatically synchronize updates from master
6. **Manage on-going activities**—Add, declare, or modify master item definitions to meet the demands from new business requirements.
7. **Enable steps 1–6 through modern cloud-based supply chain platforms**—Use Cloud, Mobile, Analytics and Social to streamline these process

Learn more—paths to product data mastery...

How a consumer goods company modernized its supply chain through cloud

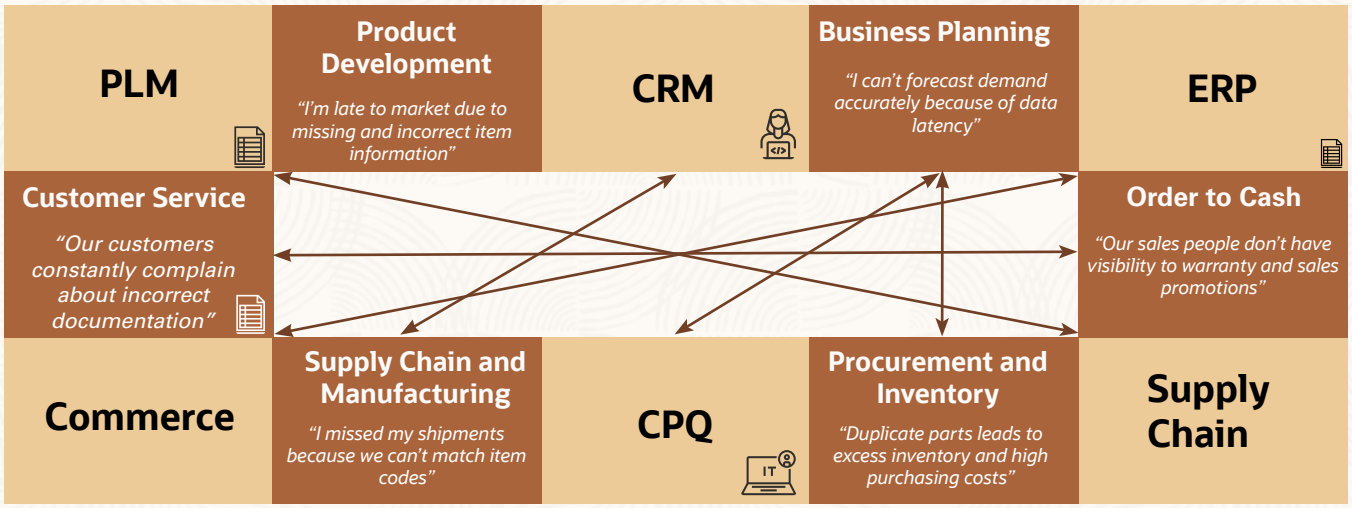
Path-to-cloud

What is your organization's cloud strategy?

Organizations need ultimate flexibility when moving to the cloud. Some organizations may choose a specific business unit to move to the cloud, such as a spin-off. Other organizations may choose a specific pillar or sub-pillar to move to the cloud, for example ERP or procurement respectively. These can be complex organizational issues that take time to sort out. In the meantime, the organization can fall into a cloud migration "analysis paralysis". **This is why organizations should consider cloud-based product master data as a first step towards moving into the cloud**. A purpose-built product master data management (also referred to as product information management) solution provides a low risk, high reward scenario for cloud adoption—potentially within six months of implementation. By analyzing and executing on product master data as a first step to cloud migration, organizations can gain a more informed perspective on how to move forward with other cloud-based initiates that will rely on product data.

What are the potential benefits for migrating solutions to the cloud?

Why move to the cloud? The promise of cloud is that it can transform the way you do business with customers, collaborate with partners and communicate with employees. As the illustration shows below, without an effective product master data management strategy in place, the promise of cloud often falls short of the stated goals. Customers, partners, employees will not see any benefits simply by using a new platform. **Simply stated, if you're moving applications to the cloud that have bad product information, you've just found a new platform for bad data!**



Common manual product data integration methods

Microsoft Excel

Homegrown IT Solutions and Legacy Applications

Mannual Data Entry

A strategy for managing product master data in the cloud can provide a rare double win for the business and IT. Product master data management in the cloud not only starts the organization down the path to cloud, but also sets the stage for other platforms to move into the cloud and truly revolutionize how you do business.

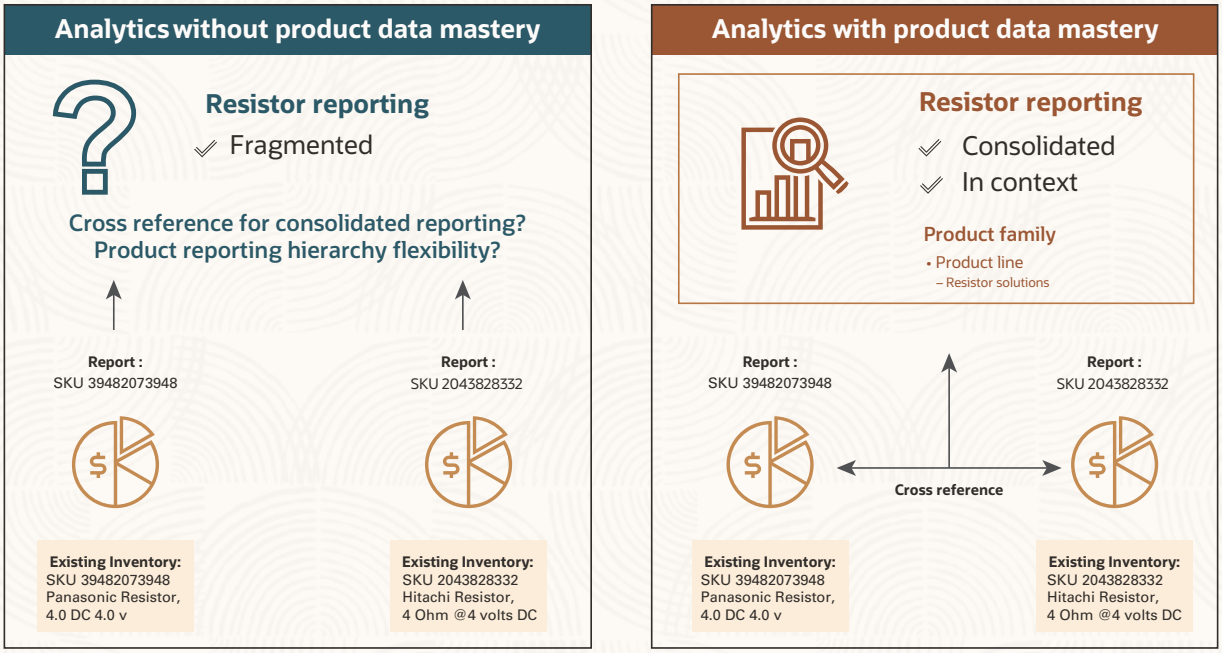
How do the strategic factors of implementing cloud align with a product master data strategy?

STRATEGIC FACTORS INFLUENCING CLOUD DECISIONS	PRODUCT DATA MASTERY ALIGNMENT
Strategic alignment between business imperatives and IT	
Support of corporate objectives	Certainly a cloud decision should be based on alignment between IT and the business. The justification of a cloud investment can be easily made when the organization's product roadmaps are considered. As stated earlier, your product record **IS** your company. Annual corporate objectives almost always include product-centric initiatives. Examples include: • Introducing new products / product lines • Growing through new product innovations • Expanding products into new markets • Acquiring new products from acquisitions • Improving product quality • Improving customer product experience By aligning cloud implementation decisions with these "product centric" corporate objectives, the benefits of the investment are sufficient enough to justify cloud operational expenditures.
Digital transformation	The decision to move to the cloud can take many routes and require some detailed analysis; however, regardless of the path chosen, product master data will be involved. Start with a strategy that standardizes master data first, before bringing applications into the cloud. While you keep legacy platforms running alongside new cloud applications, it's important that master data between all applications is governed and validated. For long term projects, product master data can provide data consistency between cloud and on-premise applications.
Tactical and strategic	Both Cloud and MDM applications can be adopted tactically initially (start with a specific product area, organization, or application), while focusing on a vision for long-term success and cloud transformation.

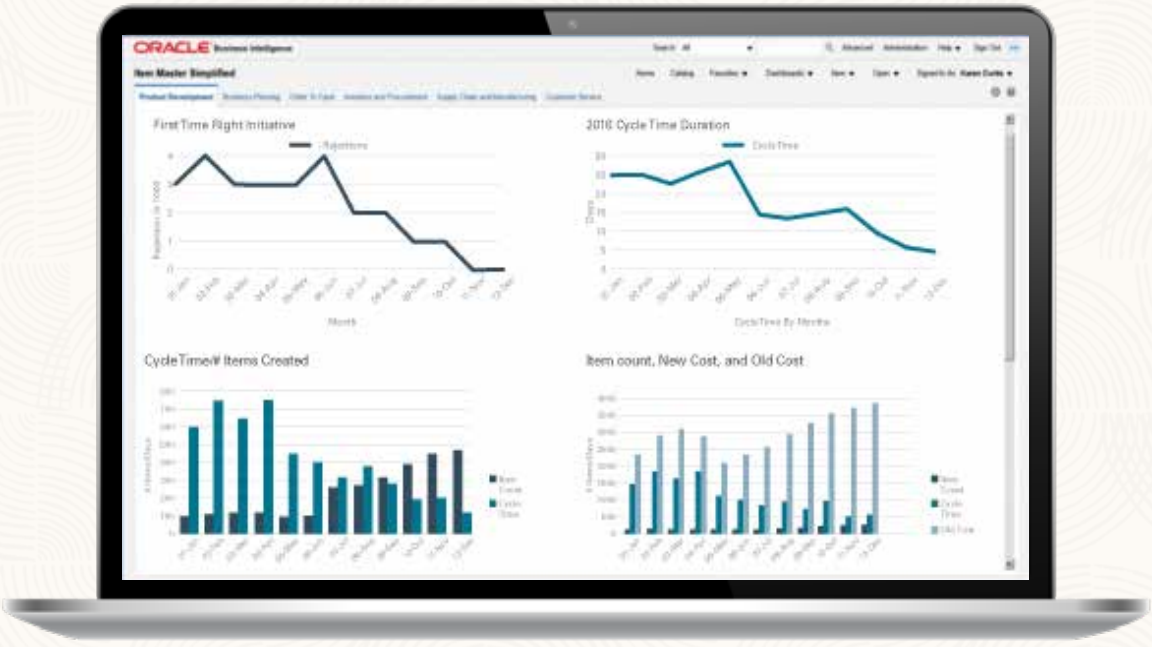
Fast Adaptation	
Limited IT resources	Organizations move to cloud technology to reduce burden on thinly stretched IT resources. Data growth management is certainly an area where IT resources and budgets are constrained. Consider a cloud strategy that also takes into account the tremendous growth in product information.
IT bottlenecks	Certainly cloud can eliminate substantial IT bottlenecks. However, even the most efficient cloud solution will still suffer from inefficiency it is hampered by data latency and quality issues. A cloud-based product MDM solution can remove these barriers to cloud success.
Unpredictability demands scalability	
M&A activity	Cloud technology enables rapid scalability to accommodate mergers and acquisitions. Organizations can accommodate new business without the time and expense of setting up new IT infrastructure. Similarly M&A activity consolidates product information that must be combined, segmented, rationalized and validated through product MDM.
Frequent reorgs	Cloud technology enables flexibility to accommodate reorganization of corporate structure. Similarly reorganization typically requires that **product information** be updated and re-cataloged to align with the new organization.
Regulation	The ability to stand-up IT platforms that meet rigorous government and industry regulations is a challenge for IT and business users. A secure, auditable cloud platform can eliminate much of this burden. Most industry regulations specifically call out **product information** as data that must be traceable and auditable.
Heightened customer expectations; IT reliability, flexibility and scalability	Many cloud implementations are driven by heightened customer expectations for IT solutions. Customers are less willing to wait for IT to catch-up to modern platforms. The ability to run a leading edge IT organization can be enabled through cloud; however, any IT solution is only as good as the data that goes into it.
Complicated architectures (Complicated products)	Enterprise platforms for ERP, PLM, CRM, CPQ and SCM can be very complex and time consuming to install, configure and implement. The ability to have pre-configured cloud-based solutions that require no IT infrastructure is a proven productivity and time-saver. ERP, PLM, CRM, CPQ and SCM architectures are often driven by complex products (for example a PLM, ERP and CPQ platform that must support a Configure-to-Order process) and rely on clean, accurate and timely product master data to run efficiently.

Disruptive technologies (Disruptive products)	Cloud is an enabler to introduce disruptive technologies at a rate that is much faster than what traditional on-premise, proprietary and closed applications can support. There is a direct correlation between disruptive technologies and disruptive products. A new disruptive product can require new technologies to support it. Inversely disruptive technology can form the basis of a new product or service offering.
User experience drives adoption	
User adoption	The often slow pace of change in on-premise and homegrown applications often results in outdated, in-efficient user interfaces. The user interfaces may simply be outdated or may not have been updated as the business needs changed. Cloud can help drive user adoption by eliminating the lag between new business processes and updated UI's to support those processes. Individuals that interact with **product data** demand modern UI's that allow them to organize, visualize, and collaborate.
Verification and validation	Successful user experience is not just about a flashy UI. It also relies on dynamic layouts, auto-validation for accuracy, auto-population of fields and auto-verification for completeness. Product data mastery includes implementing all of these best practices so that users get the right information at the right time and guess-work is eliminated.
Technology enables performance, digital technology enables unparalleled business insights	
Automation (faster)	Certainly the goal of a cloud implementation should not be to maintain the status quo—i.e., enabling the same functionality as on-premise applications. The goal of a cloud implementation should be to introduce new automated processes that deliver value while running more efficiently in the cloud. Product MDM is unique in that it is a process that drives other processes. Procure-to-Pay, Configure-Price-Quote, Source-to-Settle, and Order-to-Cash are all impacted by product MDM in the cloud.
Fewer manual disconnects (cheaper)	A core focus of a product MDM solution is a hub and spoke model that provides automated connections to both cloud and on-premise data sources.
KPI's (better)	As illustrated below, it is an accurate and timely product master data that drives accurate and timely reporting for inventory, production, planning, and throughput.

Product data mastery drives more efficient reporting



Item Master Data can provide great visibility into key business processes



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How a consumer goods company modernized its supply chain through cloud **(Customer Success)**

Product commercialization

What is efficient product commercialization without customization?

The reality is, products and services are expanding, product lifecycles are shrinking, data is exponentially increasing, and customer demands are higher than ever. With increasing consumer expectations, companies are faced with the difficult task of quickly launching and commercializing new and innovative products into the marketplace. Yet, with manual and inefficient commercialization processes, products often get to market late and are riddled with inaccurate or incomplete information. This leads to lost sales, customer dissatisfaction, and increased operational costs.

To enable streamlined commercialization processes, organizations need to have clean and consistent product data that is delivered to their sales channels while simultaneously running their SCM and ERP processes. This requires the ability to effectively aggregate and enrich the required product data and ensure data quality is always maintained.

With a product master data management solution, businesses can reduce costs by running their entire product commercialization process on the foundation of reliable product data.

An effective product data management process allows your organization to efficiently aggregate data from multiple sources and provides flexible workflow for the enrichment and change management of product data. It also delivers native business rules and data quality functions to keep your data clean. Finally, it publishes this accurate product data to all your sales channels and back-end SCM and ERP systems.

True product data mastery will eliminate customizations and leverage applications that can plug and play with your existing supply chain, ERP and Customer Experience (CX) architecture—a key aspect to making your product commercialization processes successful. This results in a quick win for your business by accelerating time-to-market which provides your organization with a competitive advantage in a fast changing market.

What are the benefits of efficient product commercialization processes?

With a product MDM solution, businesses can reduce costs by running their entire product commercialization process on the foundation of reliable product data. An effective product information management process can:

- Allow you to efficiently aggregate data from multiple sources.
- Provide flexible workflow for the enrichment and change management of product data.
- Provide native business rules and data quality functions to keep your data clean.
- Publish the clean and accurate product data to all your sales channels and back end SCM and ERP systems.
- Eliminate customizations and leverage applications that can plug and play with your existing supply chain, ERP and Customer Experience (CX) architecture—a key aspect to making your product commercialization processes successful.

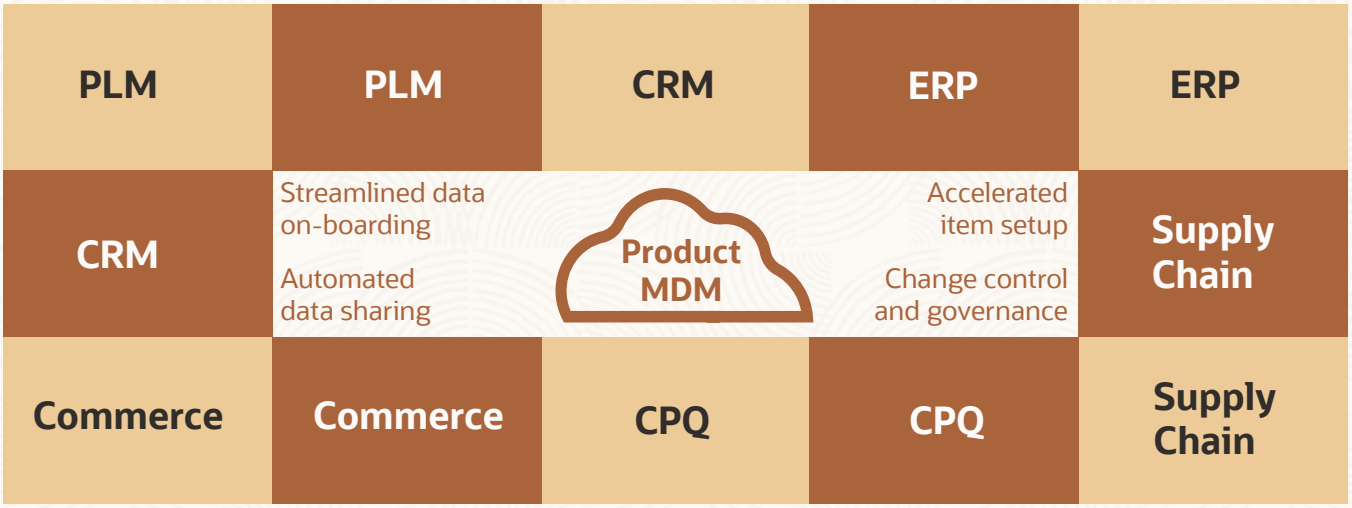
What are the components of an efficient product commercialization solution?

Product Lifecycle Management (PLM)—Many companies have PLM systems in place to manage detailed design information. While this is often a necessary first step towards developing a product, it is important to note that PLM systems are not designed to manage the full product commercialization process. PLM manages a subset of product information that should be included in downstream product commercialization activities.

Product Master Data Management—Effective management of product data, including product information, relationships, item rules, governance, and change management are at the core of product commercialization. For organizations that do not run a dedicated product lifecycle management solution, product MDM should be the initial source of new product data. For organizations that have product lifecycle management, product MDM will ingest and greatly enrich PLM content. This includes management of all the transactional data that is required to commercialize a product. Regardless of the initial source of product data, product MDM manages key commercialization functions, including the ability to:

- Streamline product data on-boarding
- Manage product and catalog setup
- Implement product change control and governance
- Publish product commercialization data to consuming platforms

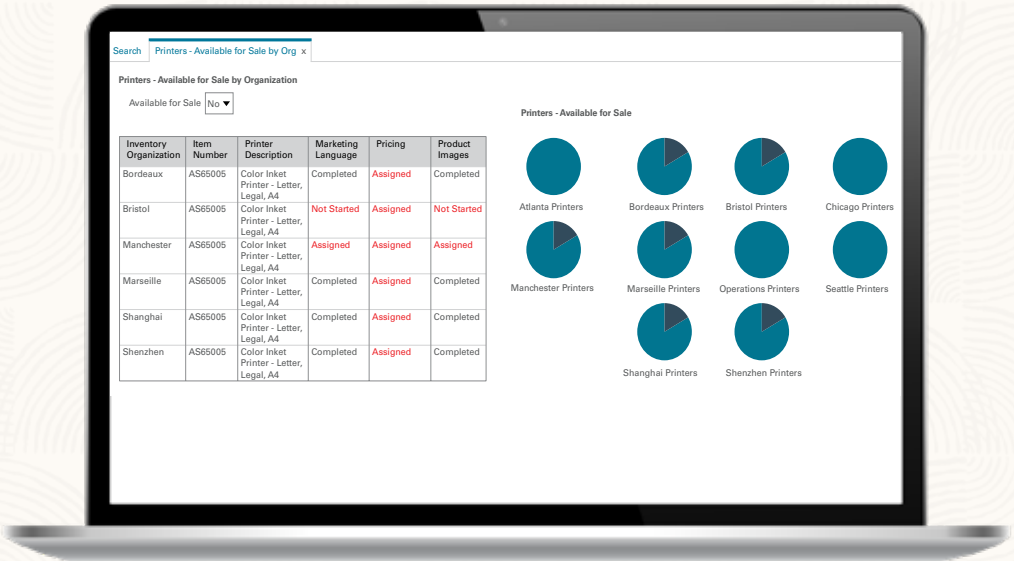
A purpose-built item master for the value chain provides a single source of truth amongst disparate supply chain applications



Data Ingestion and Publication—As shown above, because product commercialization information can come from many disparate sources (PLM, suppliers, data pools, etc.), and ultimately needs to be published to various commercialization systems, a flexible, open data ingestion and publication framework is key.

Analytics—Ultimately product commercialization needs to be a transparent process that is constantly monitored for bottlenecks and opportunities for improvement.The example below shows how an organization can actively monitor the commercialization status of its products.

Monitor the progress of product commercialization activities real-time to identify bottlenecks



Inventory Organization	Item Number	Printer Description	Marketing Language	Pricing	Product Images
Bordeaux	AS65005	Color Inket Printer - Letter, Legal, A4	Completed	Assigned	Completed
Bristol	AS65005	Color Inket Printer - Letter, Legal, A4	Not Started	Assigned	Not Started
Manchester	AS65005	Color Inket Printer - Letter, Legal, A4	Assigned	Assigned	Assigned
Marseille	AS65005	Color Inket Printer - Letter, Legal, A4	Completed	Assigned	Completed
Shanghai	AS65005	Color Inket Printer - Letter, Legal, A4	Completed	Assigned	Completed
Shenzhen	AS65005	Color Inket Printer - Letter, Legal, A4	Completed	Assigned	Completed

Best practices for product commercialization: The required consistency, flexibility, and speed needed to support product commercialization is enabled by product data mastery. Best practice steps include:

1. **Release Design for Commercialization –** Manage sign-off process and monitor status via dashboards. Simplify task coordination through secure social collaboration
2. **On-board released products—**Add the new product, component and structure definitions to the company-wide central repository. Automatically validate data based on preset requirements and send exception notifications
3. **Add commercialization attributes—** Collaborate to set item classification and parameters governing production, purchasing and fulfillment. Allow organization-specific settings and definitions. Route tasks and approvals to relevant stakeholders only.
4. **Ensure product readiness—**Streamline stakeholder review and validation via dashboards and secure social collaboration. Set access privilege based on individual / organization/facility authority. Apply change control as needed.
5. **Propagate product information—**Propagate product records to designated organizations including warehouses and plants. Automatically synchronize updates from the master.
6. **Manage on-going changes—**Adjust item settings and definitions for new requirements. Enforce change control processes based on pre-set rules.
7. **Enable steps 1-6 through modern cloud-based supply chain platforms—**Use cloud, mobile, analytics, and aocial to streamline these process

Related

How an industrial manufacturer streamlined product development **(Customer Success)**

High tech **(Industry)**

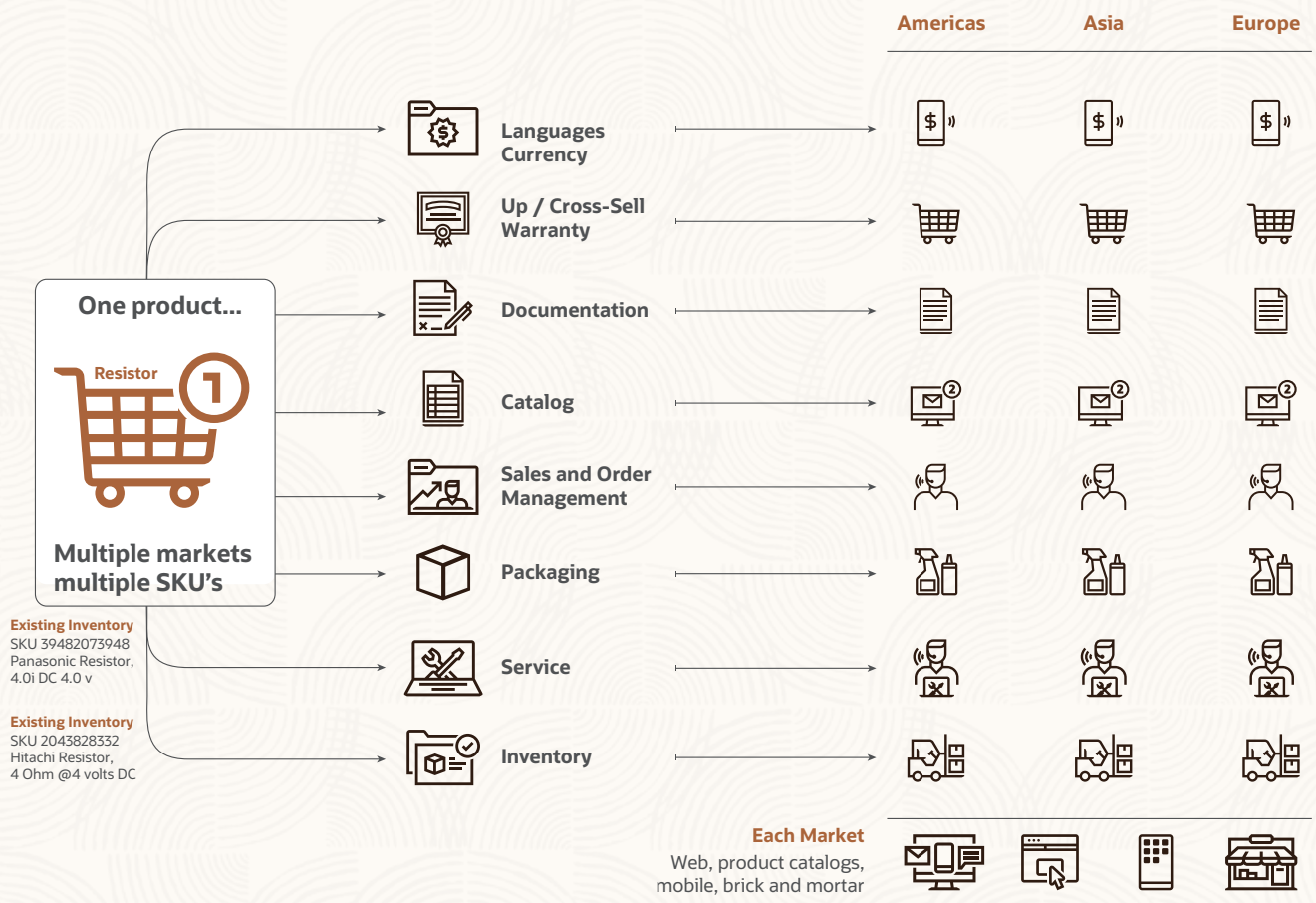
Industrial Manufacturing **(Industry)**

Omni-channel commerce

What are the challenges of modern omni-channel commerce?

Organizations must provide customers with accurate product information and quality products across numerous consumer channels—including web, print catalogs, mobile, and traditional brick and mortar stores. In an expanding globalized economy, organizations are finding it difficult to deliver the right products on time to buyers across all of their sales channels. Because of this fragmentation, businesses need to deliver products from several fulfillment points—drop ship from suppliers, high volume stores, and multiple distribution centers to meet growing customer demand for quick delivery. And with new technology disrupting established delivery models, this is an arena undergoing rapid change. This means inventory visibility is critical so that organizations can deliver products on time from an optimal fulfillment point. The ability to cross reference inventory SKU's and drive inventory availability reports from a single MDM source is a must have for omni-channel sellers.

The demands of omni-channel commerce—one product, multiple SKU's, multiple markets, multiple platforms



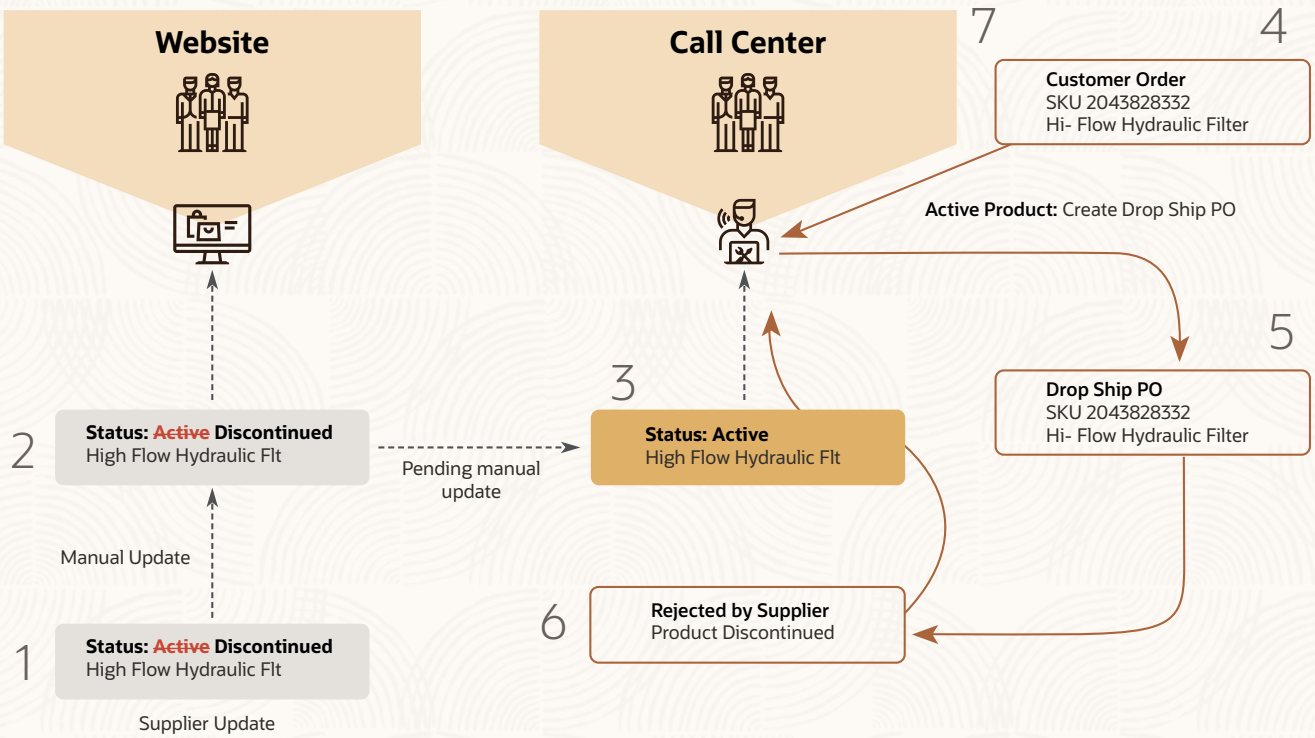
Beyond the challenge of delivering products to multiple markets, there is also the challenge of managing variations in the product itself. Note that the illustration above is actually a simplified example of the market landscape. Consider that a single product definition can vary by market. For example, as shown above if the product is sold in the Americas and Asia the packaging, documentation, service and catalog information will vary due to differing language and compliance requirements. The other variation to consider is that what starts as a single product often grows to multiple products or inventory sources within a single product line.

Consistency is required

Consistent product information allows organizations to standardize business processes for faster time-to-market across web, mobile, print or brick and mortar channels. An effective product information management system provides complete and reliable product information to customers across all sales channels while efficiently running back-end ERP and Order Fulfillment systems with trusted product data. This results in improved customer satisfaction and loyalty because consumers can rely on the business for reliable product information and successful delivery. This ultimately improves top-line revenue through increased sales. Consider the use-case:

Benefits of product data mastery
Improve customer satisfaction

Manual and error prone change management processes lead to transactional errors and unhappy customers



This example shows:

1. The Supplier discontinues the **"High Flow Hydraulic Filter"** product
2. The Supplier manually updates the customer-facing website to reflect this.
3. However, this manual update is not made to the call center ordering application in a timely manner.

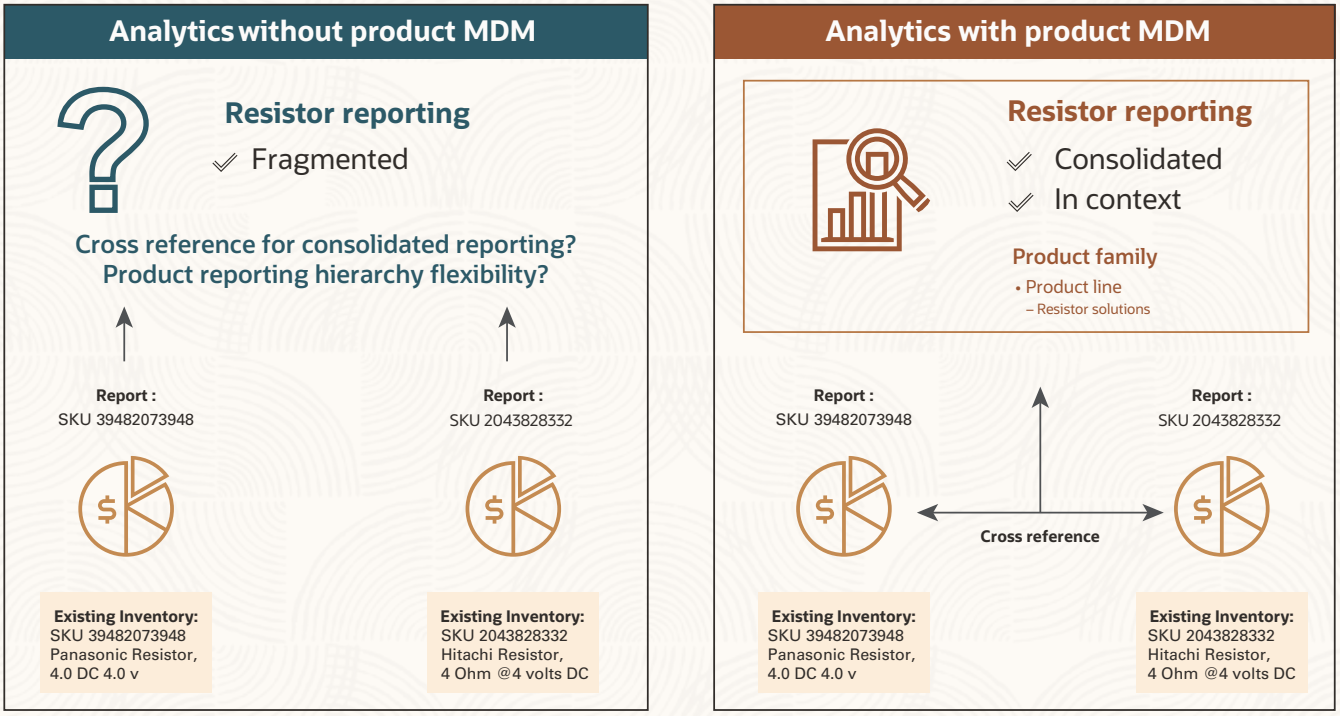
4. A customer orders the **"High Flow Hydraulic Filter"** through the call center. Because the call center has not been updated, the customer service rep does not realize the product has been discontinued and replaced with another option.
5. A drop ship PO is created
6. The PO is rejected by the supplier, since the product has been discontinued
7. The customer service department must now contact the customer and offer an alternative product. The customer will be unhappy with this situation, and the sales revenue is put at risk.

How product data mastery can help

The ability to manage hundreds of thousands of product SKU's from a single location is a must have for organizations that operate in an omni-channel commerce environment. Core omni-channel use-cases supported by product MDM include:

- Data on-boarding, verification, and validation
- Management of product families and hierarchies
- Inventory item master and cross referencing
- Catalog management and publication
- Management of multi-language content
- Management of marketing content
- Management of packaging information
- Mass information search, compare, and change capabilities
- Flexible information publication

Management of product families and hierarchies can also drive improved reporting capabilities for omni-channel commerce



Best practices for omni-channel commerce

The required consistency, flexibility, and speed needed support omni-channel commerce is enabled by product data mastery.

1. **Onboard new products—**Add new products released from in-house development or sent by suppliers to a centralized repository
2. **Validate data quality—**Automatically check data validity such as completeness and formatting base on preset rules. Send exception notifications to stakeholders
3. **Enrich product information—**Collaborate to produce marketing / sales assets including product collateral and catalogs for different channels and languages. Route tasks and approvals to relevant stakeholders only
4. **Ensure product readiness—**Streamline stakeholder review and validation via dashboards and secure social collaboration. Set access privilege based on individual / organization/facility authority. Apply change control as needed.
5. **Propagate to channels—**Automatically release approved product records to consuming channels including web store, mobile applications, retail POS, customer service, partners and distributors
6. **Manage on-going changes—**Update item definitions and assets for new requirements. Enforce change control process based on preset rules.
7. **Enable steps 1–6 through modern cloud-based supply chain platforms—**Use Cloud, mobile, analytics, and aocial to streamline these process

Learn more—paths to data mastery

How a consumer products company deliveres a consistent customer experience **(Customer Success)**

Retail **(Industry)**

Consumer Packaged Goods **(Industry)**

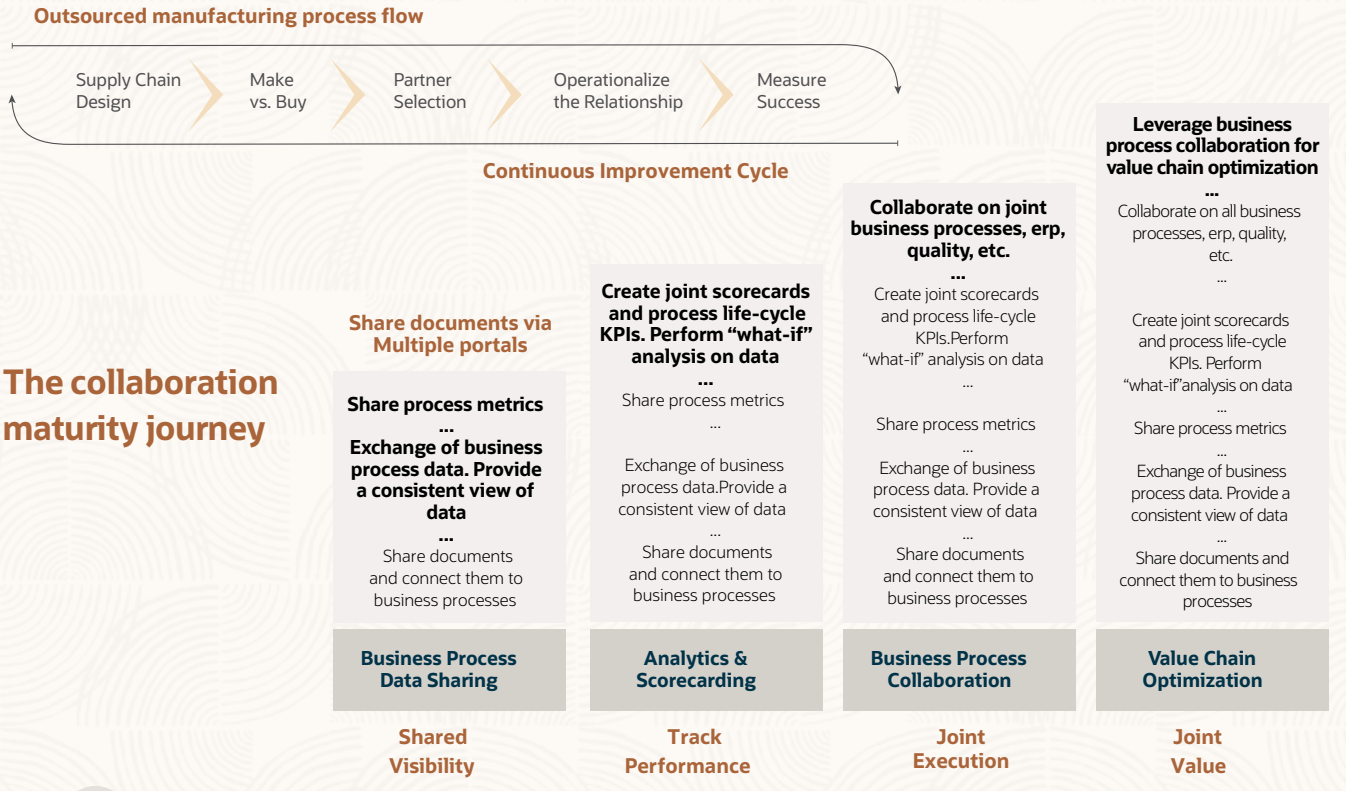
Contract manufacturing

How do you manage your contract manufacturing information process flows today? What is your level of collaboration maturity with your partners?

Typically more than half of manufacturing is executed by third-party Contract Manufacturing Organizations (CMOs). Yet many organizations are not seeing the benefits they expected from outsourcing due to a lack of product data mastery.

Leaders in contract manufacturing perform a detailed analysis at every stage of the outsourcing process to drive continuous improvement in their outsourcing throughput. This includes in depth supply chain design, make-versus-buy analysis, and partner selection. **Once partners are selected the relationship must be operationalized to maximum efficiency.** Barriers to collaboration must be broken down for optimal value chain performance. As shown below, this is typically a journey that starts with basic business process data sharing. As more information is shared, collaboration maturity increases. Joint scorecards, business process collaboration, shared process metrics and what-if analysis are enabled. However, to reach any level of maturity there must be underlying clean and accurate product master data that is transmitted efficiently between the internal organization and external manufacturers. This data is not only used in operations, but also to help drive accurate reporting (measure success) and feeds the continuous improvement cycle of supply chain design, make-versus-buy analysis, and partner selection.

Outsourced manufacturing is a process that should undergo continuous improvement in execution and collaboration



How do you communicate internal, tribal knowledge to external partners effectively? How do you scale up and transfer information to CMOs?

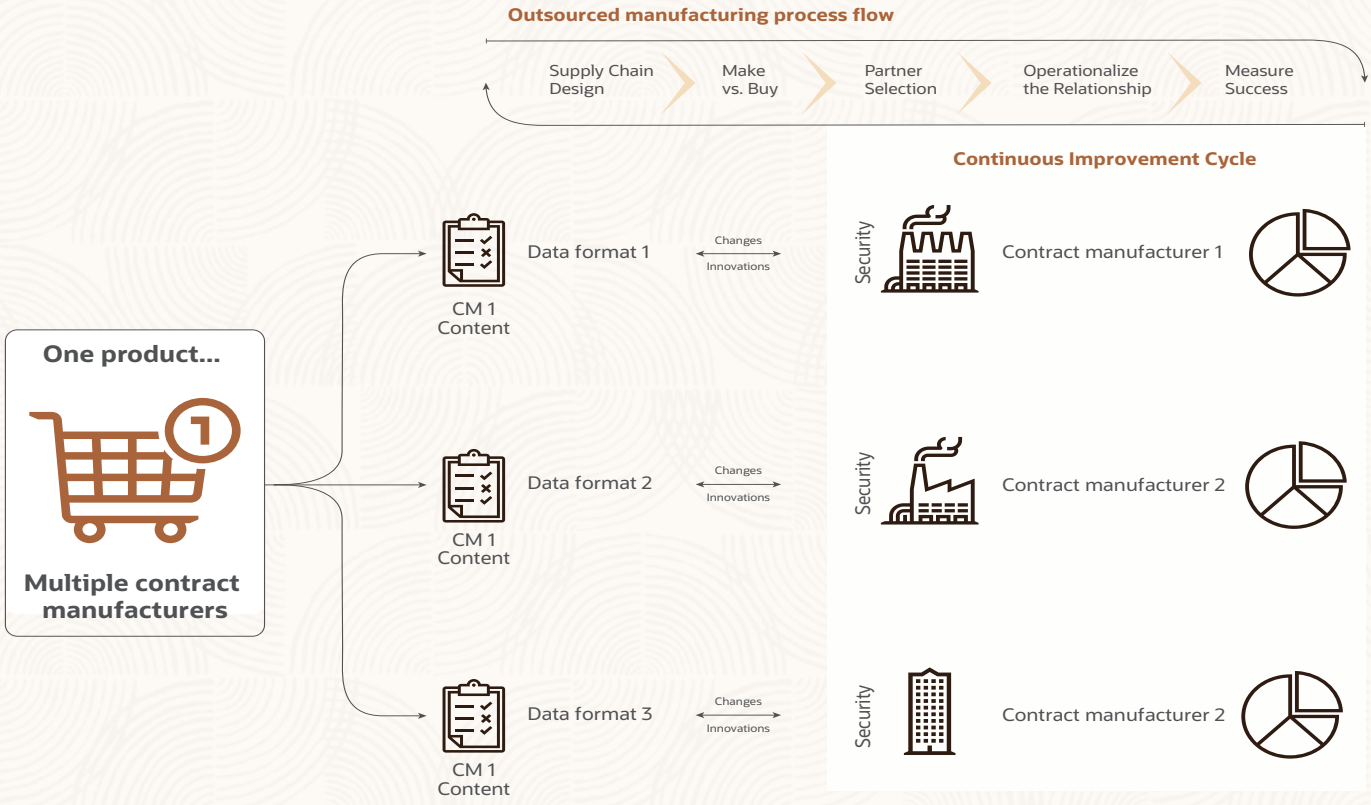
Limited collaboration, no integration between systems, and lack of common data standards are typical challenges when working with contract manufacturers. This not only poses a significant financial risk, but can also result in missed deadlines and market opportunities. Now add the need to process new changes and pass innovative ideas back and forth between organizations and CMOs and you've got a potential recipe for disaster. For example, in Life Sciences it often takes a decade and billions of dollars to bring a product to market – largely because of the fragmented approach to product management processes.

In the High Tech industry, where several different contract manufacturers may be used for the same product, efficient collaboration is a particular challenge. In these use-cases there can be nuances between how data flows to various partners including differences in:

- Data format
- Security
- Content
- Reporting
- Change management
- Innovation and collaboration processes

As the graphic below depicts, once the decision is made to partner with several different CMOs, there must be individual process alignment considerations for each partner.

Partner Selection—information for one product sent to three different CMOs in three different formats; measure success across three different CMO relationships



How do I break down barriers and operationalize my relationship with my outsourced partner?

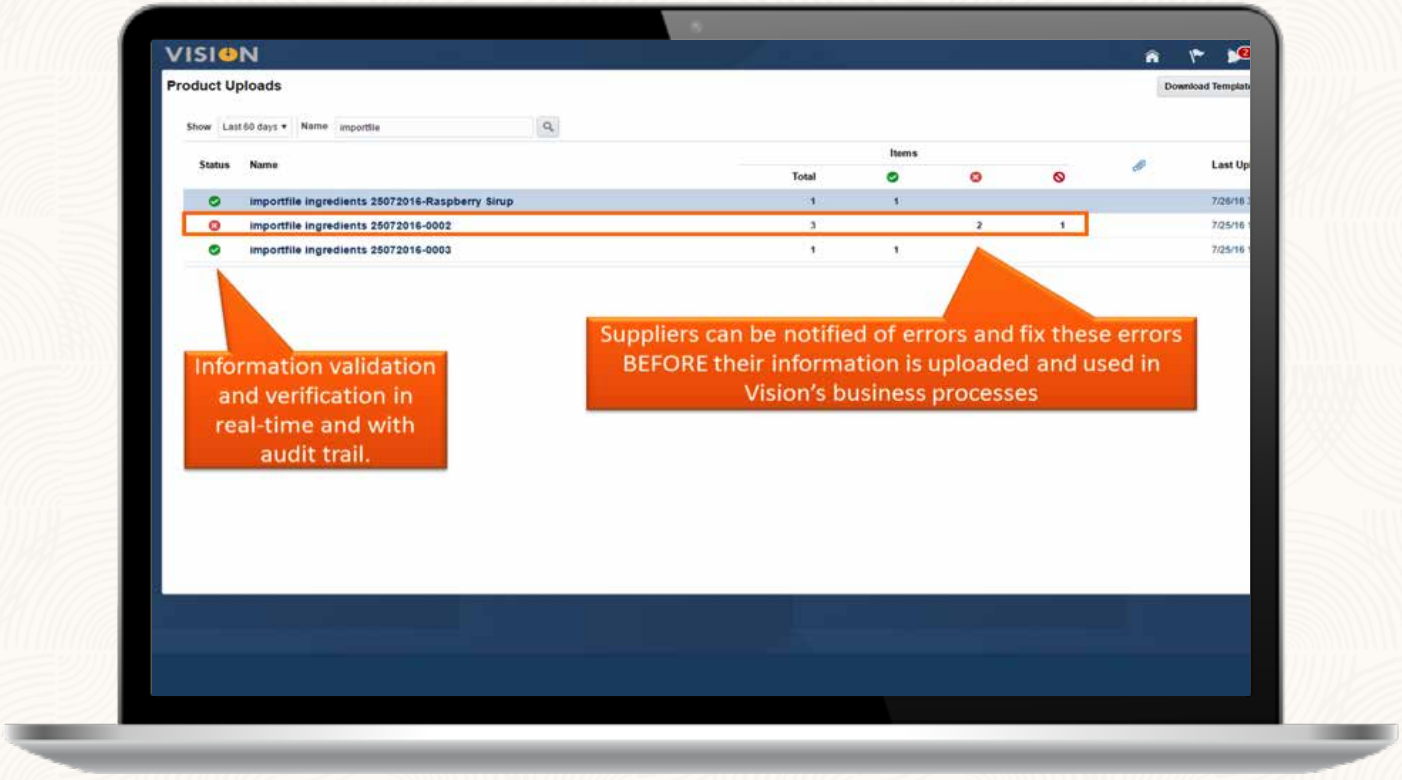
Companies stumble in a number of key areas when working with contract manufacturers.

Continuing to rely on homegrown processes that do not make operational sense to partners

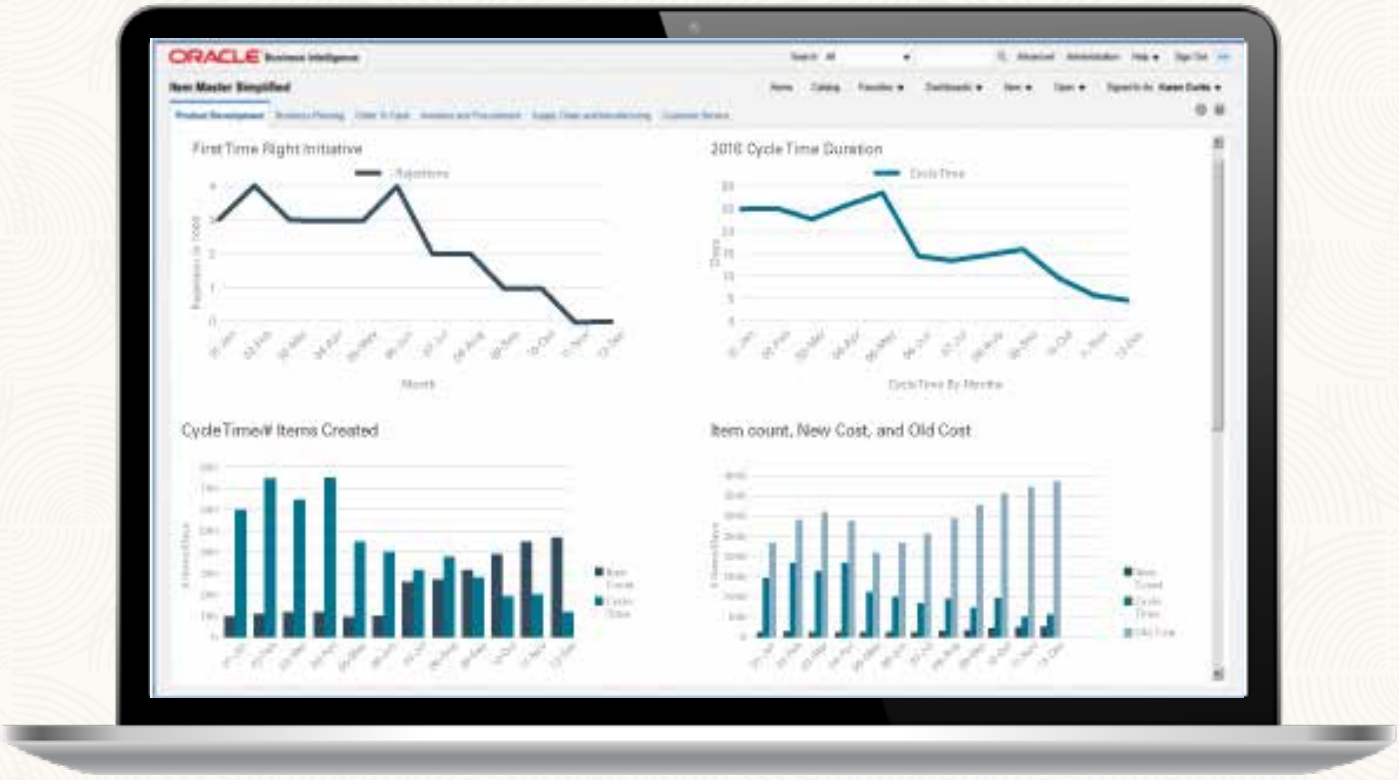
How do your manufacturing partners provide and receive information today? Do they rely on your FTP sites, homegrown solutions, legacy systems or manual processes? A modern cloud based product hub solution provides multiple avenues for manufacturing partners to provide and receive data. This includes web portals, mobile apps and via automated web services. Not only are these processes automated, but they provide continuous data quality tools so that CMOs can easily validate the quality of the data they provide, and also be guaranteed that they are receiving accurate data.

True collaboration with CMOs is not just about the exchange of data. As previously discussed, it also includes leveraging of business processes and collaboration across the supply chain. Work with a solution provider that can enable social collaboration, cross functional workflows, joint scorecards, key performance indicators (KPIs) and what-if analysis across the product master data landscape.

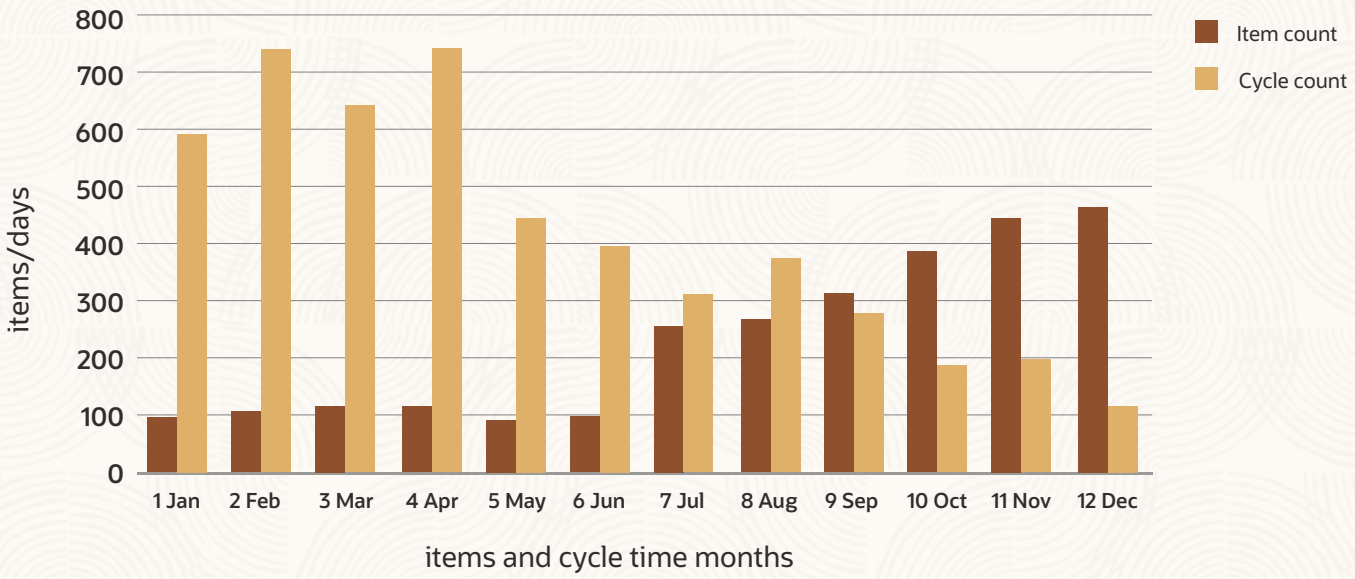
Provide CMOs with an easy-to-use cloud / web-based portal to upload content



Track success metrics—share scorecard and KPI data with partners



Cycletime / # items created

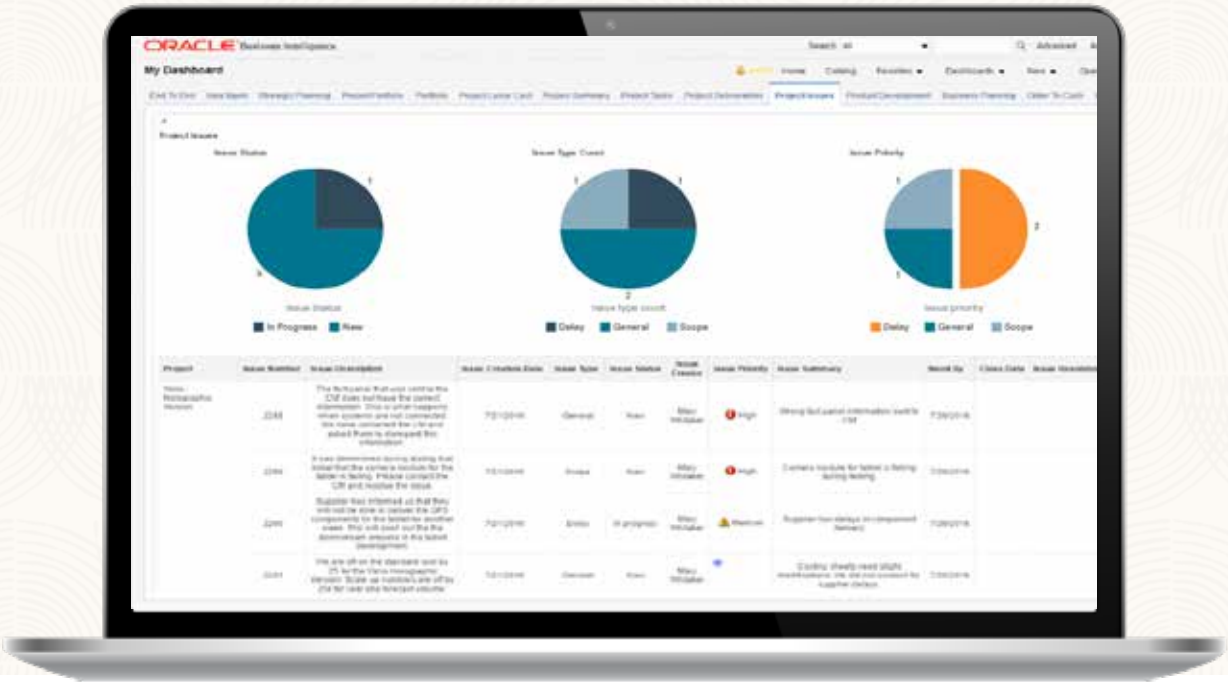


This detailed level of collaboration will not only improve margins and improve productivity, it will also quickly identify where the bottlenecks are in the process, so that quick action can be taken.

Under communicating anticipated problems or concerns

Without properly formatted data and analytics, organizations and their CMOs are forced to be reactive rather than proactive. Well organized product master data provides the foundation for accurate reporting on contract manufacturing issues.

Tracking CM issues in real time



Forgetting that the internal operations and engineering teams have an enormous level of tribal knowledge that is not fully understood by partners

It is not uncommon for there to be over 500 attributes in the definition of a product. If this valuable metadata is scattered in various systems and accessed through means of tribal knowledge, it is impossible to efficiently share this data with CMOs. Without a product master data solution that can selectively publish content to partners, information stored in disparate systems is shared with contract manufacturers in an ad-hoc manner. The content is not properly governed, secured, validated and verified. This is especially true for products that undergo frequent changes. The end result is often scrapped product, security breaches and production delays. A product master data solution that manages all the critical product information in a single location and can selectively publish this content to CMOs eliminates this reliance on tribal knowledge.

Learn more—paths to data mastery
How a global pharmaceutical company manages growth
(Customer Success)

Path to mastery—Role

Executive

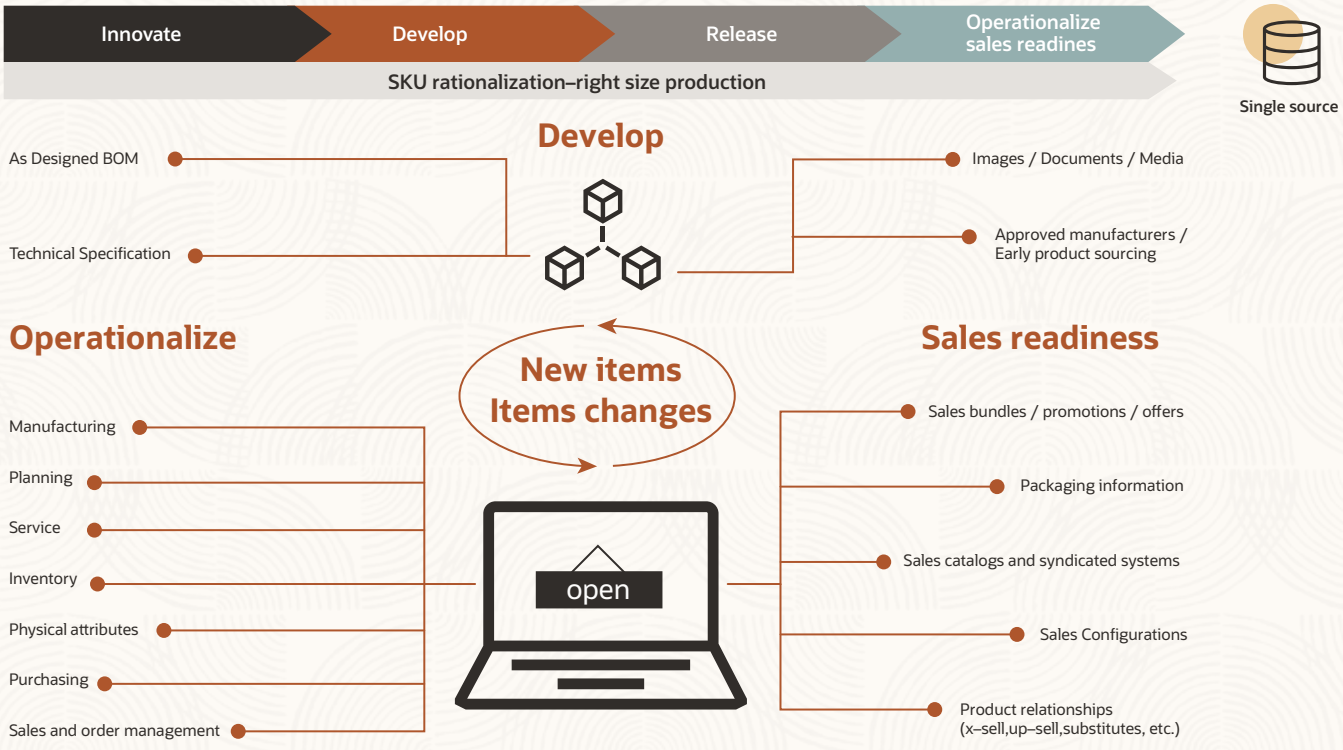
How do you leverage product information to continuously adapt to changing market conditions and deliver shareholder value?

Executives must keep an eye on the balance sheet and focus on top line and bottom line revenue.

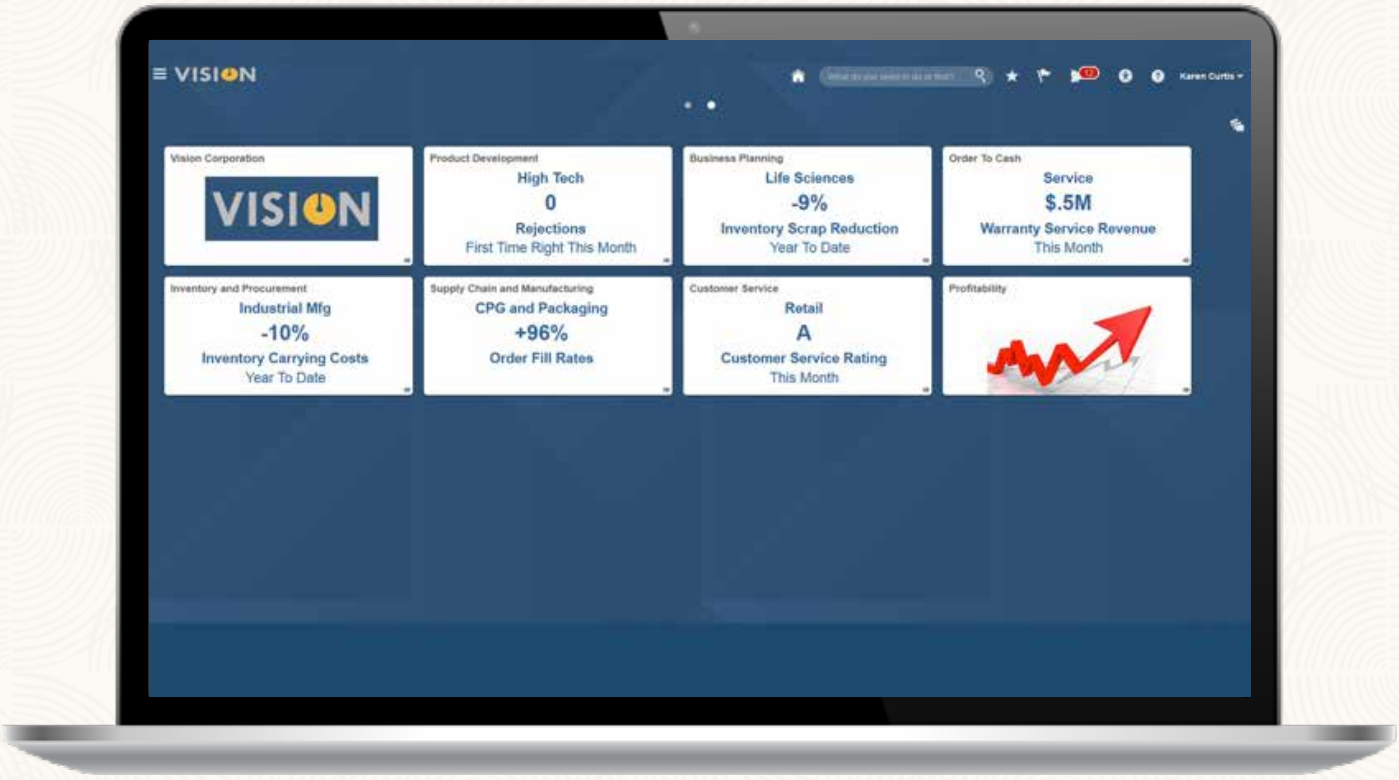
Product data mastery increases top line revenue by improving gross sales. This is enabled through better management of the new product/service introduction and commercialization processes. Companies that beat their competitors to market with the right product/service and a healthy profit margin, win…period. Product master data plays a central role in this, since true product data mastery is not simply about managing product information but rather takes a more holistic approach that includes:

- Maintaining your organization's competitive edge by focusing on how valuable intellectual property is created, maintained, secured, validated, utilized, and re-purposed.
- Alignment between innovation, product development, product commercialization and operational readiness to introduce the right product/service on-time and on-budget
- The ability to collaborate early in the product design and commercialization process for maximum creativity, validation, and optimization—so that the highest quality, most competitive product/service is released.
- Providing decision support solutions that provide visibility into the process so that the right decisions can be made and pivots can be executed quickly.

Management of the ideate-to-commercialize process



Executive level decision support across company divisions



Product data mastery increases bottom line revenue by optimizing data, and reducing costs, early in the process. Again, the concept is simple. The more error-checking, collaboration, validation, and optimization teams can do very early in the process, the less the likelihood of costly mistakes and delays later in the process. These mistakes and delays can take the form of:

- **Incorrect product data being released to the marketplace—**for example, incorrect product instructions and specifications
- **Delays in releases—**for example, a product shipment is held up due to a late release of required European compliance data
- **Incorrect data released to operations and the supply chain—**for example, an incorrect unit results in scrapped materials; a supplier selling discontinued product
- **Releasing the wrong product to the marketplace—**lack of collaboration between marketing and product development results in releasing a product that underperforms in sales

All of the issues above relate to how organizations collaborate around product master data.

Eliminating the "ripple effect" of bad item data

As the chart on the next page illustrates, as the product / process development cycle matures the level of structure and cost of errors increases. That dynamic is why it is important to have product information validation, quality and governance early in the process. For example, an error that was overlooked, but might have only cost $50 to fix in "Phase 0" of the project, costs $5,000 to fix during "Phase 6" of the project.

One of the cultural challenges (where executive leadership is required) is organizational commitment to finding these product information "ripple effects" and eliminating them. This process of organizational forensics will require key stakeholders from throughout the organization and executive sponsorship.

Solve the challenges of new product development and commercialization earlier in the process

Innovate / Design operationalize / Sales readiness → **Business process**

Level of structure / Cost of errors increases

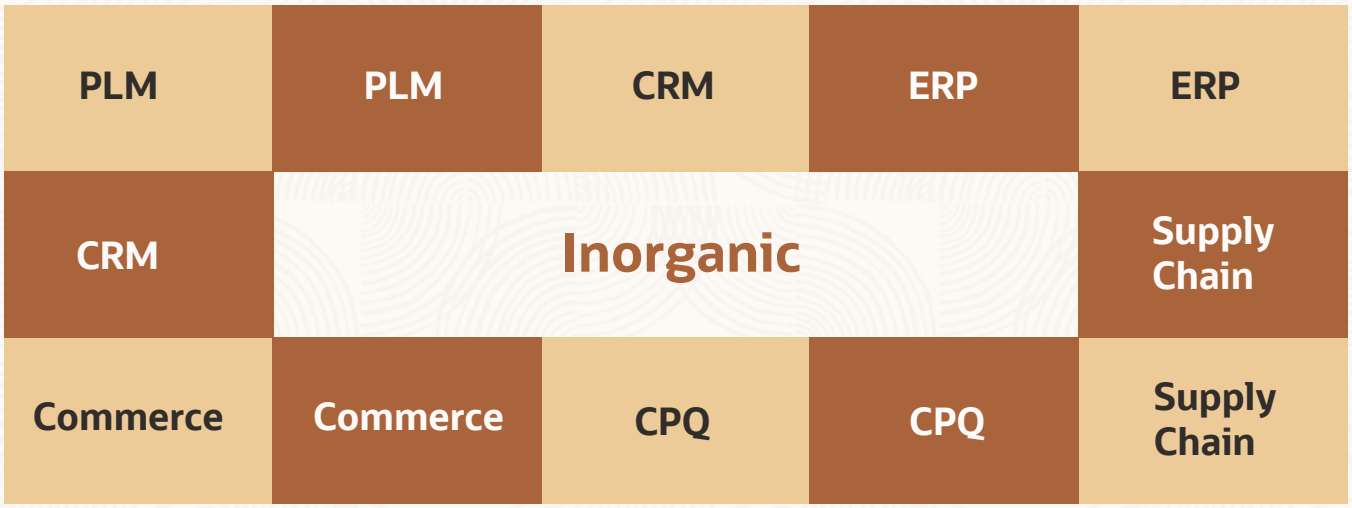
Business challenges	Capabilities	Value
Increased time to market	• Manage new items and item changes • Scalable product data structure • Extensible architecture • Information portal	• Streamlined NPI process • Rapid commercialization • Reduced development costs
Data quality and governance	• Manage new items and item changes • Role and data security • Business rules and data quality	• De-duplication and reduced cost • Improved data quality • Improved decision making
Data synchronization	• Data import and publication	• Single source of reference
Inaccurate taxonomies, coventions, guidelines and processes	• Item class hierarchy • Item catalog • Item relationships • Item cross references	• 360 view of the product • Increased operational visibility
Managing insourced and outsourced supply chain	• Item attribution and security • Information portal	• Buid anywhere, buy anywhere • Increased supplier collaboration

How will you deliver shareholder value through organic and inorganic growth?

It is imperative that your product master data management strategy align with your corporate strategy. For example:

- **Inorganic growth—**How do mergers and acquisitions fit with your company strategy and recent history? How smoothly have these acquisitions run in the past? What are your plans for the future? How will you manage and secure the valuable intellectual property that you acquire from these acquisitions?
- What legacy systems are you acquiring from these acquisitions? How will they be smoothly transitioned into your current ecosystem? Will they be decommissioned over time or remain active?

M&A activity brings along the "baggage" of additional ERP, CRM and other enterprise systems.



The "As-Is" organization and organic growth

In addition to analyzing your company's growth vectors, it is also important to take a step back and look at how you drive throughput today.

- How successful are you at managing multiple divisions of your organization? Are you able to work through organizational and geographic boundaries to discover synergies between projects, products, services, and departments?
- Do you have the visibility you need to manage product information across separate purchasing, design, operations, and product marketing divisions?
- How rapidly are you able to expand and roll-out new business ventures? Do you have product flexibility and alignment starting on day 1?
- Does your organization have visibility into what product is being produced on a global scale? Does your organization have visibility into what inventory is being purchased worldwide? Can you cross-reference product and inventory SKU's globally to rationalize production and purchasing?

What existing or planned investments do you have in Cloud, ERP, SCM, CRM and PLM applications? How will you maximize the value of these investments?

Even if we ignore obvious business factors like growth, revenue and cost, there is still the not so obvious issue of large capital investments you have likely already made in cloud, ERP, SCM, CRM, PLM, etc. How do you measure the return on these investments? Are these solutions truly optimized to provide all the capabilities promised? Incorrect and slow product data will decrease the promised throughput of these mission critical business solutions. This is a simple concept … garbage-in means garbage-out. No matter how optimized your enterprise IT solutions are, if they're working from bad data they are not truly running at maximum efficiency and providing the promised benefit to the organization. For example, you might have leading-edge PLM and ERP platforms that you have invested significant capital in to manage the design-to-release process. But what solution bridges these two platforms to link the PLM engineering content to the operational and transactional data required for enterprise resource planning? This is an example of an area where product data mastery can help.

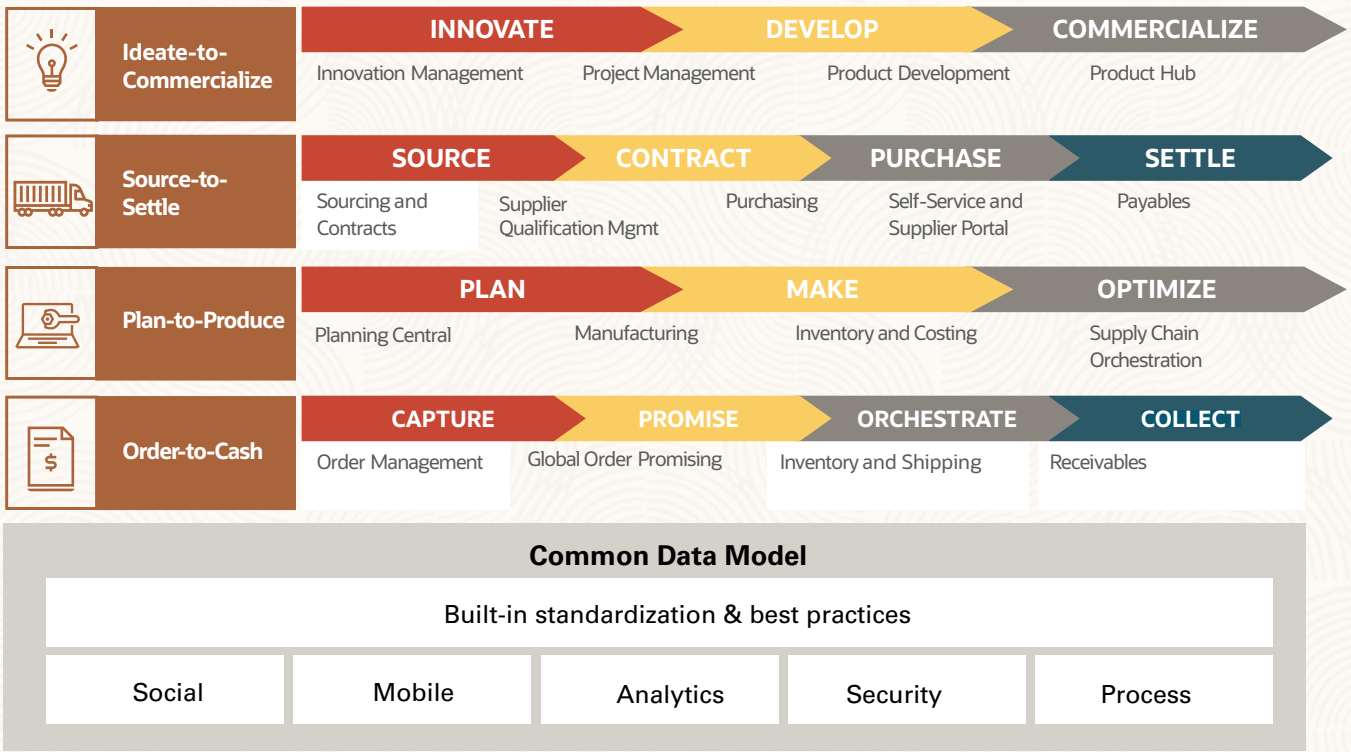
Analyzing the return on investment for an optimized product master record

As an executive sponsor, you don't have to go it alone when trying to sort out the big picture of how product data mastery can improve your top and bottom line revenue. Work with partners that have a proven track record, not only of implementing MDM solutions, but also other impacted solutions such as ERP, PLM, CRM, CPQ and Analytics. These organizations not only understand MDM principles, but also have knowledge of the key business processes and solutions it will impact. They can analyze the potential positive impact of product data mastery in:

- Ideate-to-Commercialize
- Source-to-Settle
- Plan-to-Produce
- Order-to-Cash
- Procure-to-Pay
- Inventory Management
- Employee Productivity and Organizational Efficiency

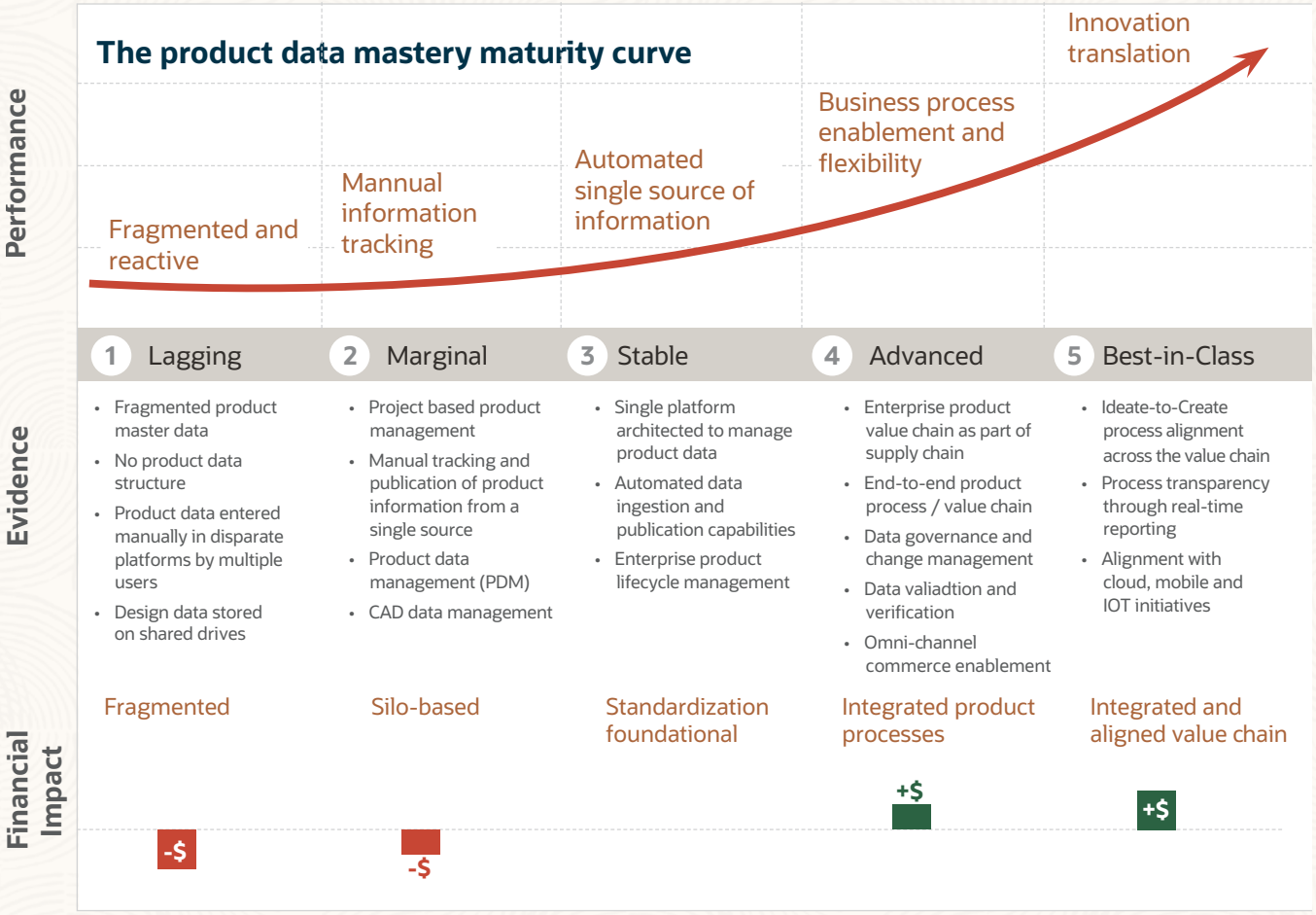
Product data mastery has a direct impact on key modern supply chain flows

Modern supply chain flows



These organizations can also provide synergy by helping you maximize your existing and future investments in cloud and on-premise applications. A good place to start is by examining your product data mastery maturity level.

As an executive sponsor you must understand your organization's product data mastery maturity level and how it impacts your business



Organizations that operate at level 0 – 1 are likely incurring significant costs from a lack of product data mastery. Business processes that are negatively impacted by bad product data and latency include business planning, inventory management, procurement, product development, customer service, production, outsourced manufacturing and order management. Organizations that operate at a level 4 and 5 can gain significant market advantages, while improving top-line and bottom-line revenue.

ROI is important, but how long does it take to implement a solution?

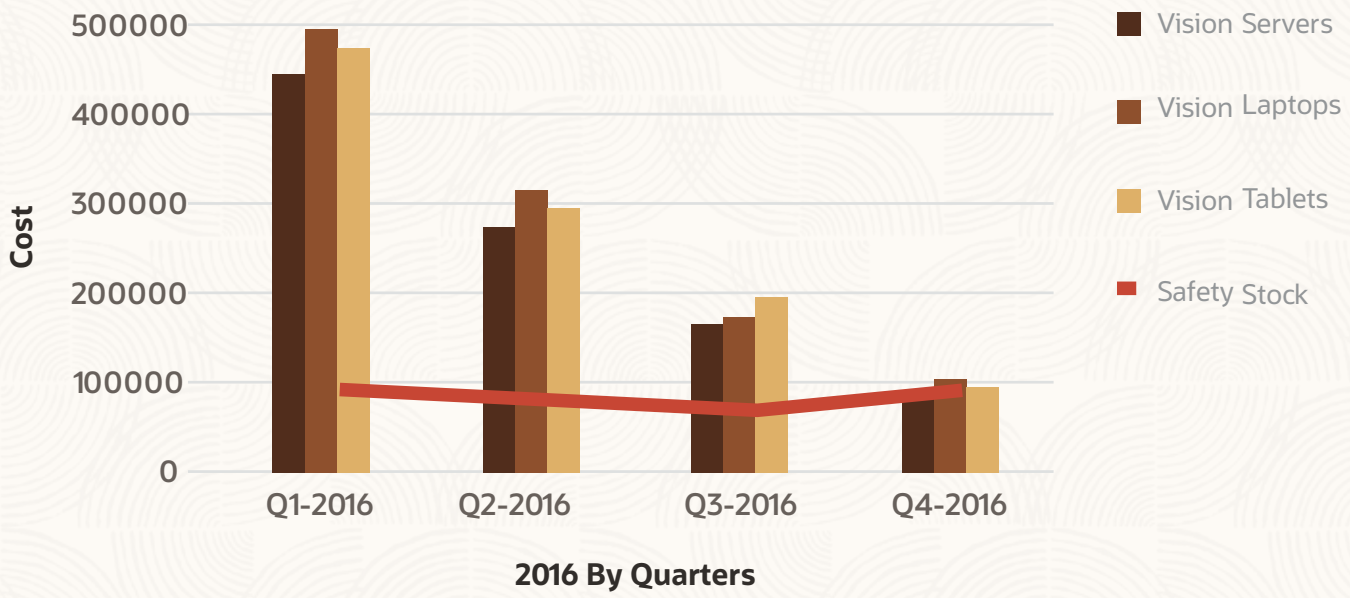
There are a few factors that enable a quantifiable return-on-investment from product master data management projects within the first six months of implementation:

- The solution can be cloud-based, thus avoiding the time and expense of setting up IT infrastructure
- Specific "low hanging fruit" can be targeted for initial phases of the project to obtain quick benefits. For example, start with a specific product line, business process, existing division or a new start-up division.
- With many potential spoke systems ingesting data from product master data, there is tremendous opportunity to streamline commercialization and operations processes for measurable impact.

Finally, it should be noted that not only is quick ROI achievable, it is measurable since dashboards and analytics can be driven by product master data.

As an executive sponsor you must understand your organization's product data mastery maturity level and how it impacts your business

Inventory carrying costs



Learn more—paths to data mastery

How a global pharmaceutical company manages growth
(Customer Success)

How an industrial manufacturer streamlined product development
(Customer Success)

How a consumer products company deliveres a consistent customer experience
(Customer Success)

IT professional

How do you manage the cost of data growth with a limited IT budget?

It is no secret that data is growing exponentially, while IT budgets are shrinking. For the IT organization the challenge is wading through the alphabet soup of data, applications, and standards while prioritizing which data to focus on. So why invest in an MDM solution for product data? Here are a few things to think about:

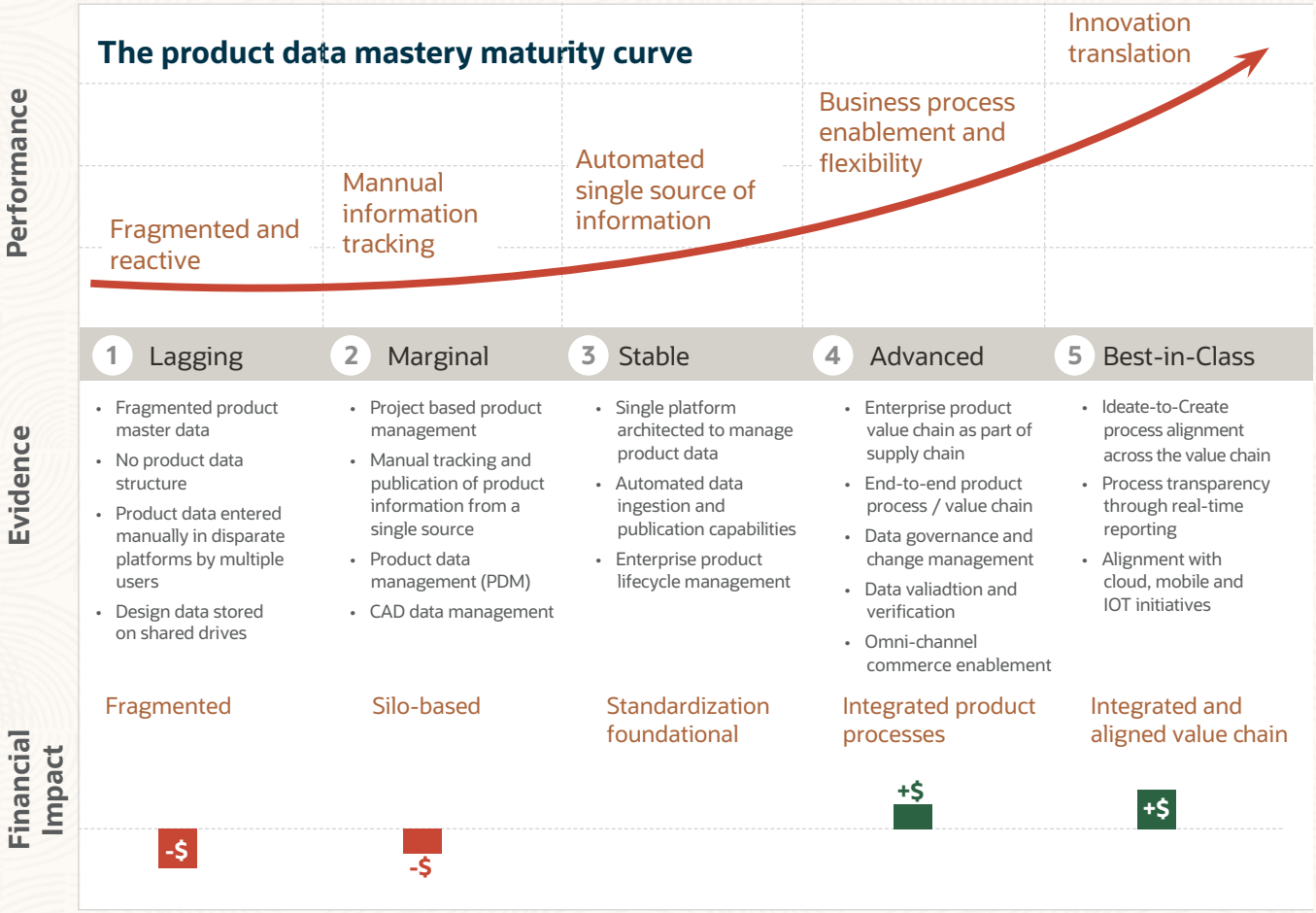
- ERP solutions are typically one of the largest enterprise software investments for an organization. Product master data is the fuel that powers ERP transactions.
- Product master data management projects can start small and scale quickly in the cloud, which provides a quick win for IT and the business.
- Management of product data can be the first step in an overall MDM strategy that helps to contain the cost of data growth.

I have homegrown solutions that manage product data. I have a PLM solution that manages product data. Why do I need a product master data management solution?

While you may have existing solutions that manage aspects of master data, it's important to take a step back and do an in-depth analysis of how well these solutions actually perform. To obtain true product data mastery answer the following questions about your existing product MDM solutions:

- Do they require manual intervention?
- Do they have an open architecture that supports integration for a variety of use cases?
- Do they have a modern, web-based user interface?
- Do they provide configurability and upgradability?
- Do they include modern collaboration frameworks like mobile, change management and social networking?
- Do they provide user help and documentation?
- Do they provide analytics and reporting?
- Do they provide proper data governance and security?
- Do they provide data quality?
- Do they manage multiple product hierarchies and catalogs required by your business?
- Do they satisfy your customers?
- Do they address full commercialization or are they tuned to only support the product development phase?
- Ultimately, how do your existing product MDM solutions align with the product data mastery maturity curve shown below?

The IT organization must understand the company's current product data mastery maturity level and how it impacts your customers



Do you have a data on-boarding and syndication solution for management of product data?

An open architecture is a must-have for an organization considering an MDM solution. Look for a solution that supports a variety of industry standard integration methods for ingestion and publication of data, including:

- A user friendly and configurable cloud, web-based portal available 24/7 to internal and external users
- A configurable and flexible data model, attribution, rules engine and workflow
- The ability to upload and read a variety of formats including Microsoft Excel, CSV and XML
- Service Oriented Architecture (including Web Services) for real time integration and publication, with the ability to handle thousands of SOA calls per day
- ETL services for batch upload
- Pre-built cloud and on-premise integrations
- Data extraction and reporting for analytics, dashboards, and reporting
- Out-of-the box attribute seeding for commonly required ERP and SCM information
- The ability to publish to print catalogs

IT Projects Made Simpler with Product Data Mastery: ERP Migration with Consolidation and Connectivity

Your business leaders continue to add new ERP systems as a result of organic growth or mergers and acquisitions. The business then looks to IT to make all the acquired or developed systems coexist with the organization's legacy applications – typically within a very short timeframe! This often leads customers to ERP consolidation projects that disrupt the business and destroy IT budgets. Manual processes and the inability to efficiently standardize and load product data into ERP systems add to the complexity of ERP consolidation.

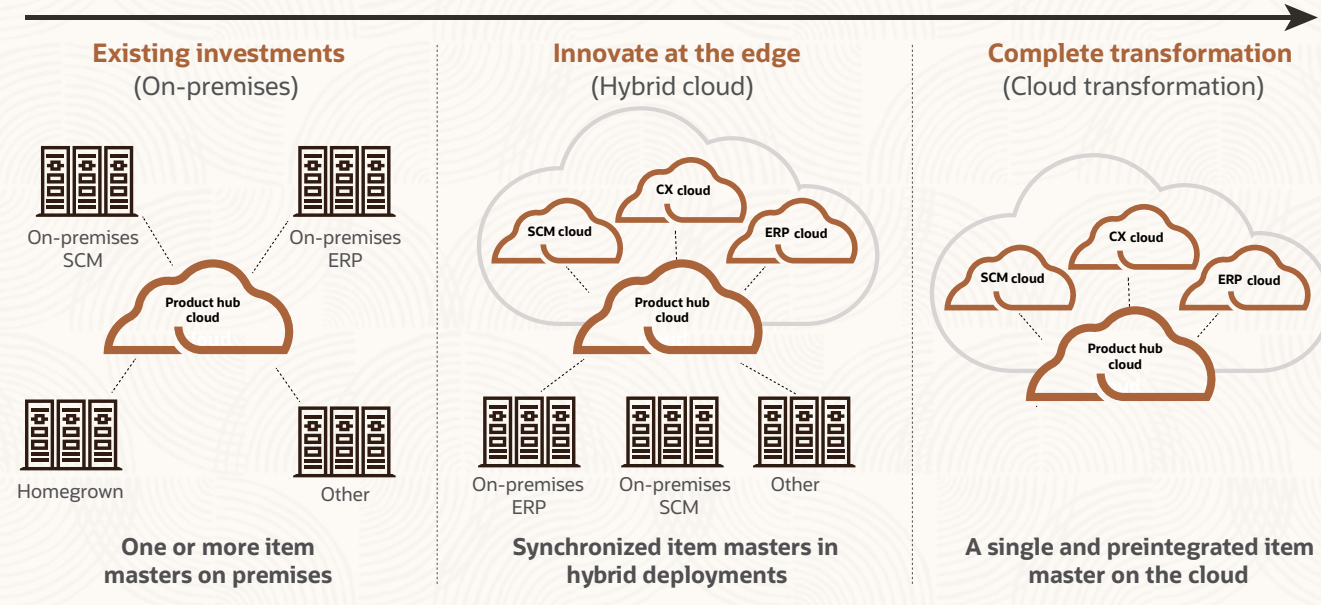
What is needed is the ability to isolate the product consolidation process from multiple ERP systems without disrupting your business. A product master data management system provides this isolation to aggregate, standardize, and load product data into a centralized system which feeds into your desired ERP systems.

You can also continue to uptake new functionality for your ongoing product data management needs without having to upgrade your existing ERP systems. Not only does a product master data management system provide you a better process to consolidate your ERP systems but can also provide clean and accurate information that all of your ERP systems can leverage.

IT Projects Made Simpler with Product Data Mastery: Path-to-Cloud

A great advantage a product master data management solution in the cloud is that it can be deployed as your first application on the cloud to establish a clean and accurate item master that can seamlessly integrate to your on-premise ERP and Supply Chain applications. This way IT can help the business derive immediate business value without having to rip and replace legacy applications. When the business decides to transition supply chain management or ERP processes fully to the cloud, IT can benefit from the fact that they are built on the same item master provided by product master data in the cloud – this means that IT will not need to replicate item data or build any new integrations to run end-to-end processes on the cloud.

Product master data management enables a strategic path to the cloud



Learn more—paths to data mastery

How a global pharmaceutical company manages growth **(Customer Success)**

How a consumer products company deliveres a consistent customer experience **(Customer Success)**

Path-to-cloud **(Business Driver)**

Product Manager

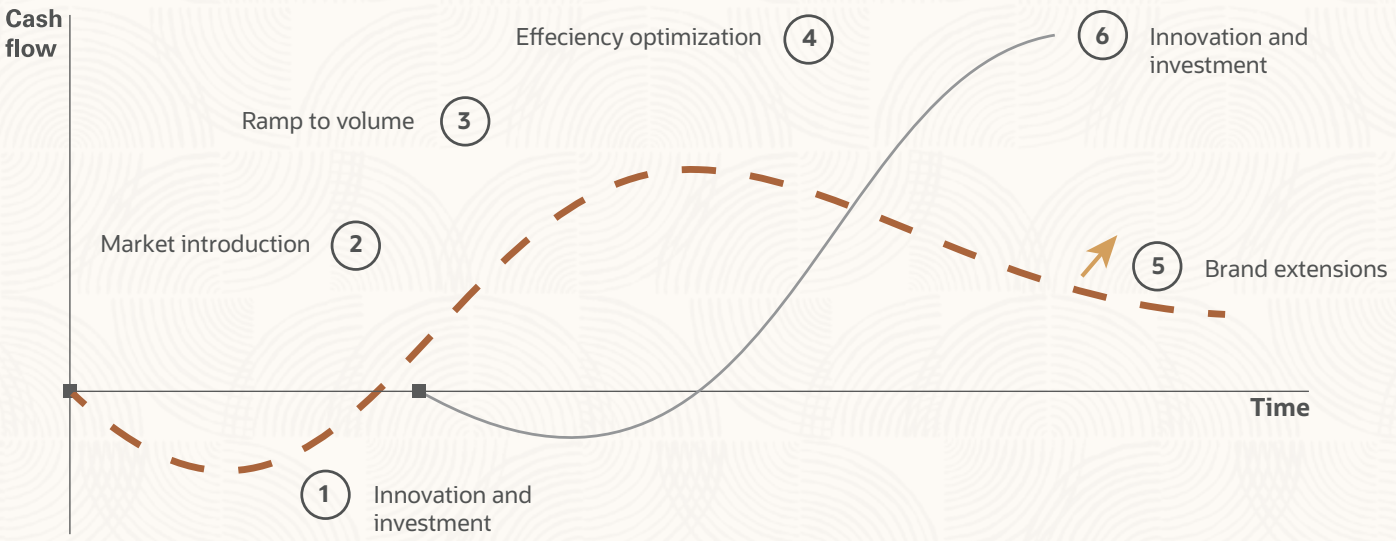
How does your organization obtain first-to-market, right-to-market advantages?

Most product management and development organizations are familiar with the ubiquitous product lifecycle curve illustrated below.

This curve outlines the typical steps involved in a new product or process lifecycle:

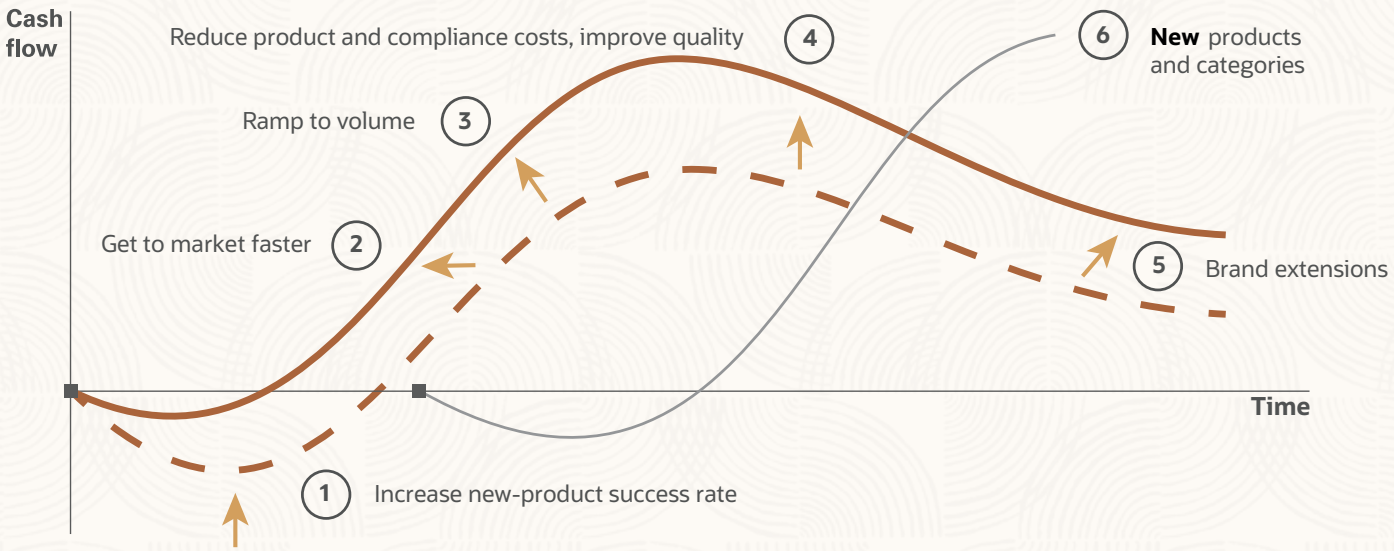
1. Innovation and Investment—R&D investments for new services, products, or line extensions require an initial investment. This results in a negative a cash flow at the beginning of a development project.
2. Market Introduction—Eventually the service or product is introduced to market and (hopefully) becomes a success.
3. Ramp to Volume—Production volume increases as sales increase and the organization ramps to full volume.
4. Efficiency Optimization—When the product or service is mature, there may be efforts to improve profit margins by reducing costs and improving quality; if the product was not outsource manufactured at launch, there may be efforts to introduce outsourcing to reduce costs.
5. Brand Extensions—Over time, the product or service will start to become stagnant or obsolete so brand extensions (new SKU's) may be utilized to refresh the product
6. Next Wave of Innovation and Investment—The next phase of innovation begins with new products, services, and categories being introduced. Ideally, these new projects are influenced by lessons learned from the previous project, so that initial investment costs are lowered.

The product lifecycle curve is well known



Traditionally, organizations that wanted to positively impact this curve looked to product lifecycle management (PLM) solutions to shift the curve towards greater cash flow over time.

Moving the product lifecycle curve creates significant advantages
The product lifestyle curve



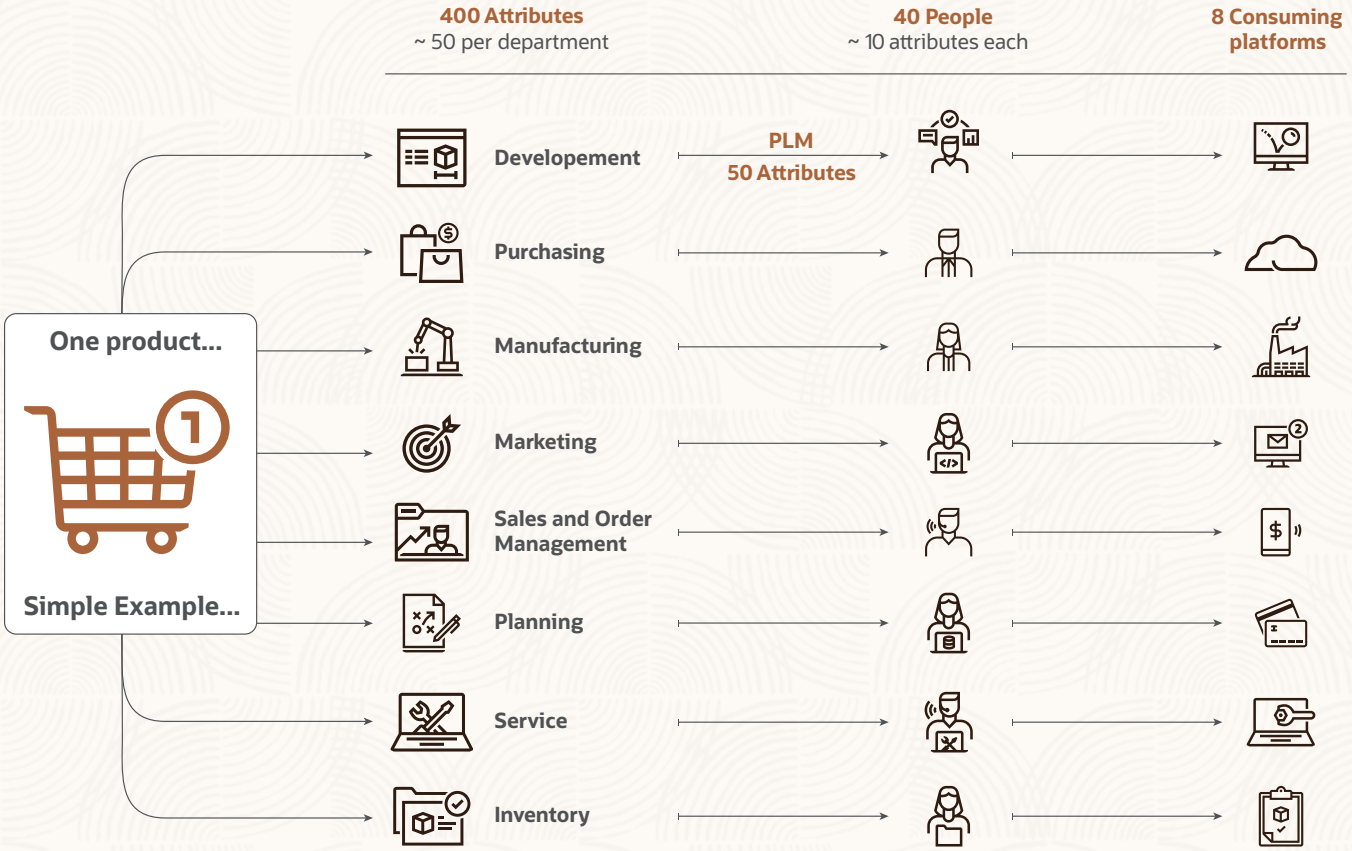
Indeed, PLM has been proven to have a positive impact by providing significant financial gains for many companies. However, even PLM solutions can be limited in how they influence this curve for a few reasons:

- PLM is often limited in its use and confined to a relatively small group of engineering users. In some cases PLM is implemented to focus on product data management (PDM) and CAD data management rather than the full product lifecycle.
- PLM is a fairly mature market. Most product-centric organizations will have a PLM system that is well established within their ecosystem. This means that the competitive advantages of having a Product Lifecycle Management solution can be minimal, unless it is fully optimized to work with your organization's supply chain. Work with PLM solution providers who understand that PLM is more than just an engineering/PDM application, but rather a solution that should be integrated into the entire supply chain. Also work with partners that understand how to align PLM and MDM solutions and strategies.
- PLM is often the initial source of the product master. It also will typically include change order and governance capabilities to manage the initial set of product data. However, PLM usually only manages a small subset of design centric data. Take the simple example shown below. In a basic product design that requires 400 attributes to commercialize, 40 design centric attributes (weight, height, unit, drawing number, etc.) are authored in PLM. The other 360 pieces of information must be authored by teams outside of development and also require collaborative governance and change control. Without product MDM, these users often work

in ERP platforms that do not provide the secure, collaborative user interface required for new product setup.

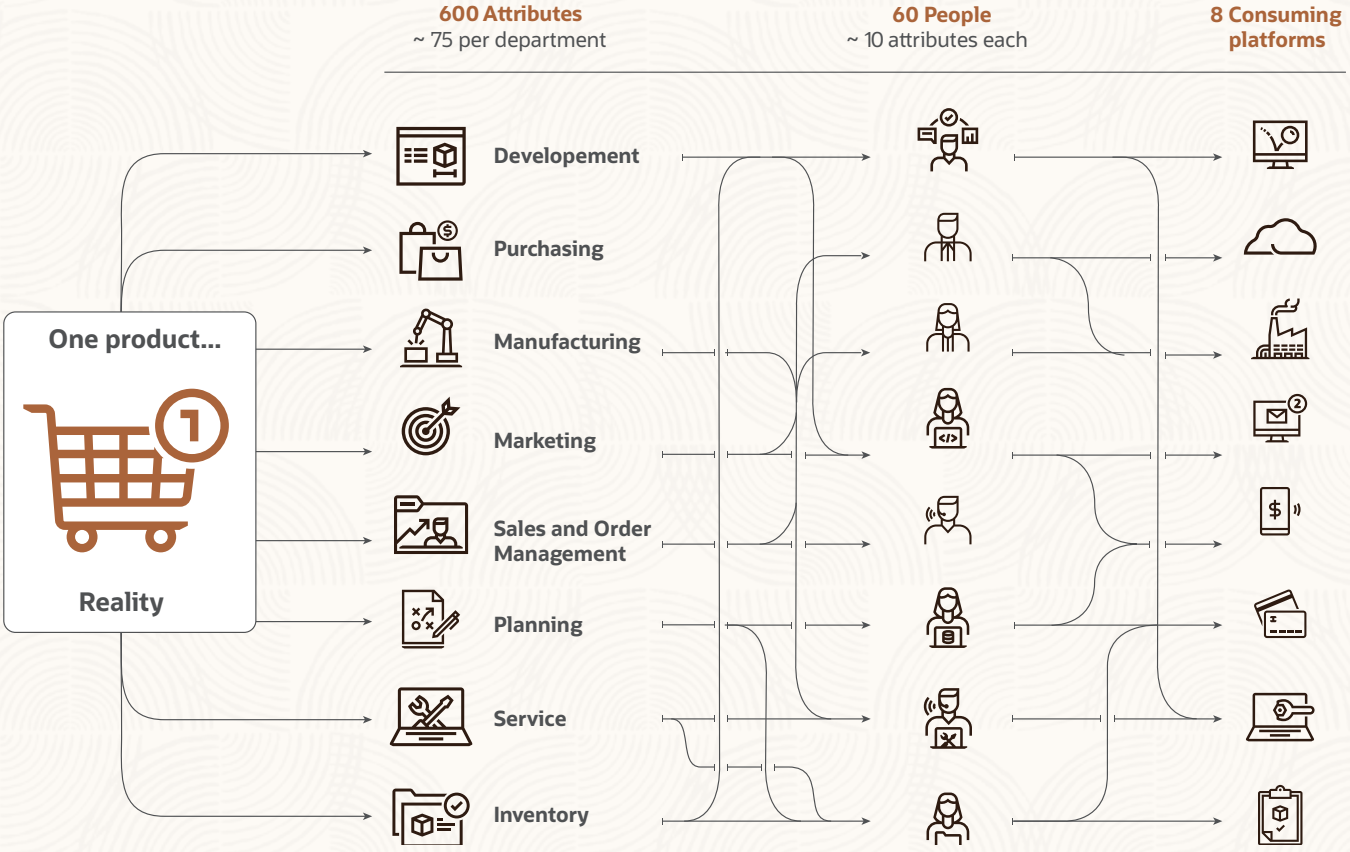
- While PLM is typically optimized for new product introduction, it is not usually utilized for product decommissioning. This is an area where product master data management can go beyond PLM by managing the trading partner relationships and information publication required to decommission a product.

PLM does not manage all of the product information required to fully commercialize a product



Note, the illustration above is a simple example. A more complex/realistic example shows how this business process typically operates. In most cases, there will be cross-pollinization of information between individuals, more data and additional consuming platforms as shown on next page.

In the real world, data flows across organizational boundaries



This is why product MDM is a must-have for product centric organizations. It complements PLM development discipline, by providing purchasing, manufacturing, marketing, planning, service, inventory, sales and order management with the level of change control and governance required to fully commercialize a product. Product master data management enhances PLM processes by enabling item, product and catalog information integration to downstream solutions such as ERP, CRM and Configure, Price Quote (CPQ) applications. This provides a more complete view of the product definition – including sales, marketing and supply chain data. Product MDM best practices also include the ability to decommission products so that your trading partners no longer sell discontinued products.

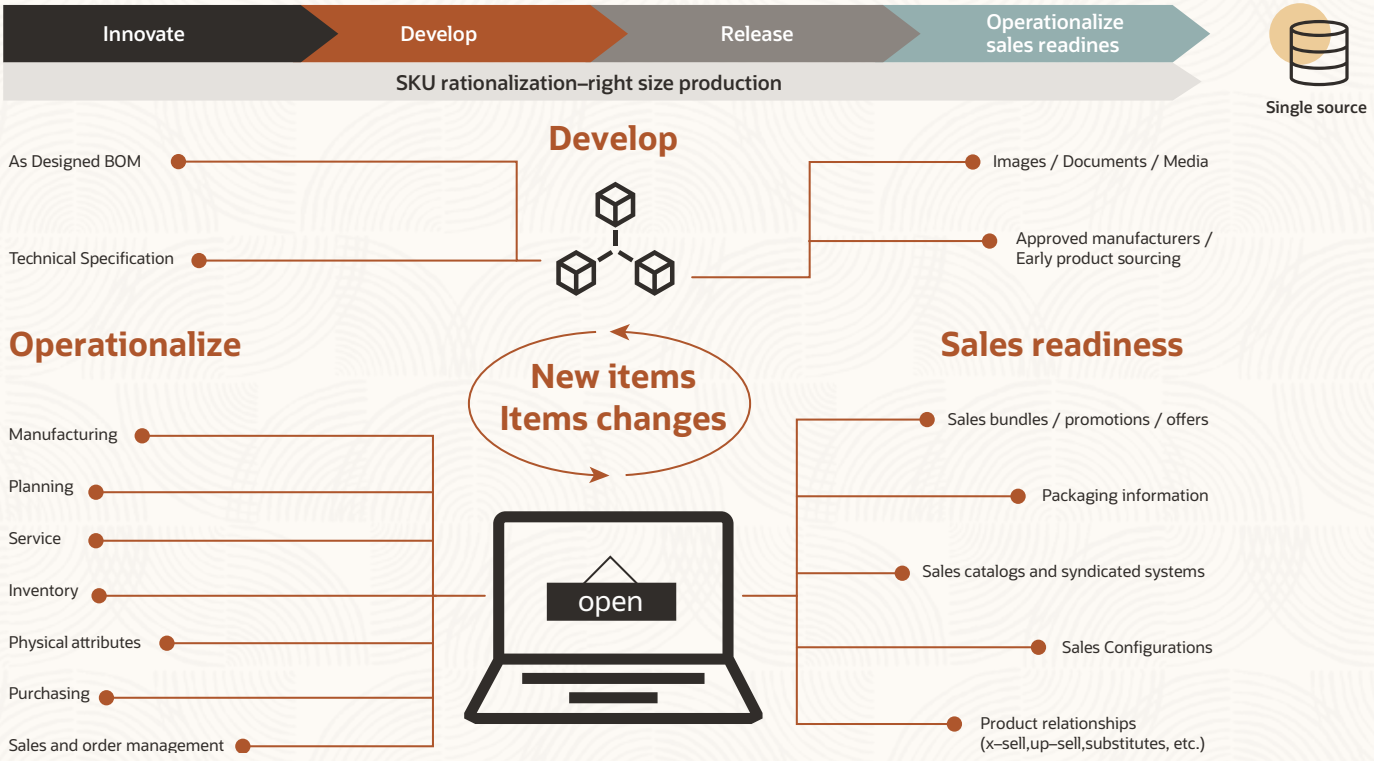
For organizations that don't run a dedicated product lifecycle management solution, a product master data management solution can become the initial source of new product data, providing the level of governance, control, and visibility that is required to efficiently define new products. A cloud based product MDM solution offers even more flexibility by providing web-based 24/7 access for the organization and its supply chain.

Ideate-to-commercialize—end-to-end collaboration for new product development, rapid product commercialization, and supply chain readiness.

Leading-edge new product development is more than just superior engineering and design. It is collaboration among all key development and commercialization stakeholders. Product master data plays a central role in this process, because true product data mastery is not simply about managing information, but instead takes a more holistic approach that includes:

- Maintaining your organization's competitive edge by focusing on how valuable intellectual property is created, maintained, secured, validated, utilized, and re-utilized.
- Alignment between innovation, product development, product commercialization and operational readiness to introduce the right product or service on-time and on-budget

Management of the ideate-to-commercialize process



- The ability to collaborate earlier in the product design and commercialization process for maximum creativity, validation, and optimization – so that the best, most competitive product or service is released.
- Providing decision support systems that provide visibility into the process so that the right product development decisions can be made and pivots can be executed quickly when needed.

Product data mastery drives better analytics for making key product development decisions

Analytics without product MDM

Resistor reporting

✓ Fragmented

Cross reference for consolidated reporting?
Product reporting hierarchy flexibility?

Report :
SKU 39482073948

Existing Inventory:
SKU 39482073948
Panasonic Resistor,
4.0 DC 4.0 v

Report :
SKU 2043828332

Existing Inventory:
SKU 2043828332
Hitachi Resistor,
4 Ohm @4 volts DC

Analytics with product MDM

Resistor reporting

✓ Consolidated
✓ In context

Product family
- Product line
  - Resistor solutions

Report :
SKU 39482073948

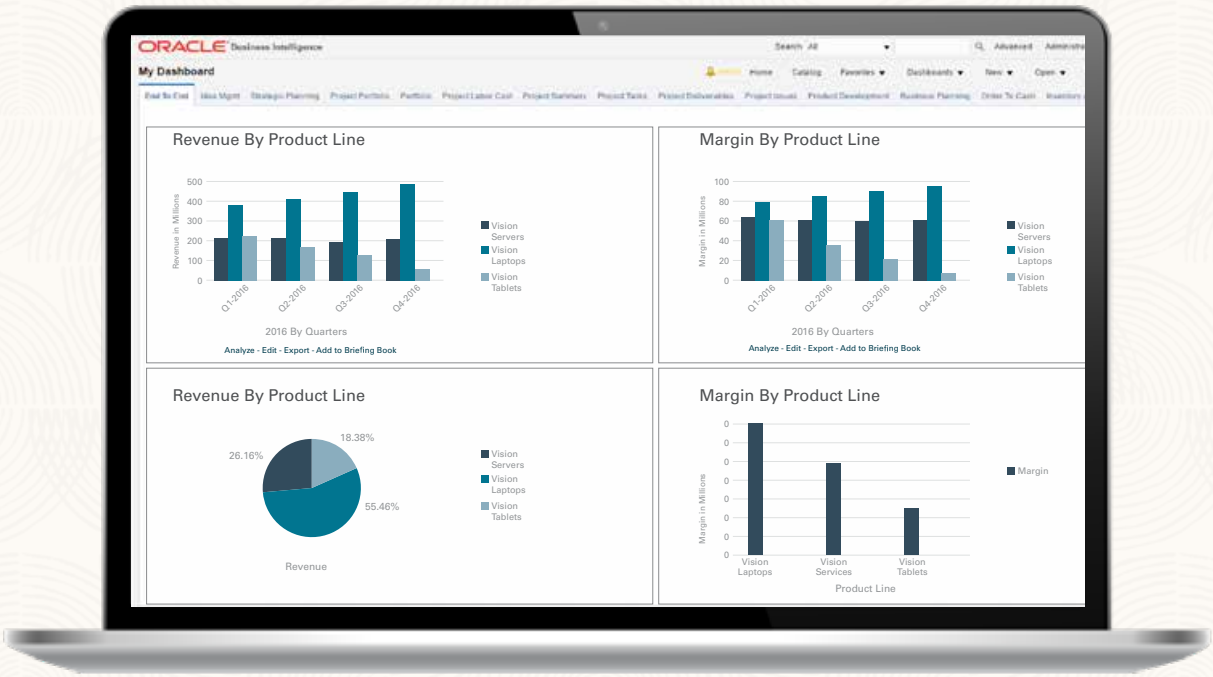
Existing Inventory:
SKU 39482073948
Panasonic Resistor,
4.0 DC 4.0 v

Cross reference

Report :
SKU 2043828332

Existing Inventory:
SKU 2043828332
Hitachi Resistor,
4 Ohm @4 volts DC

Product Manager decision support across product lines



Learn more—paths to data mastery
How an industrial manufacturer streamlined product development
(Customer Success)

Operations and supply chain

How does product master data flow into your operational systems? How nimble are your operations and supply chain organizations?

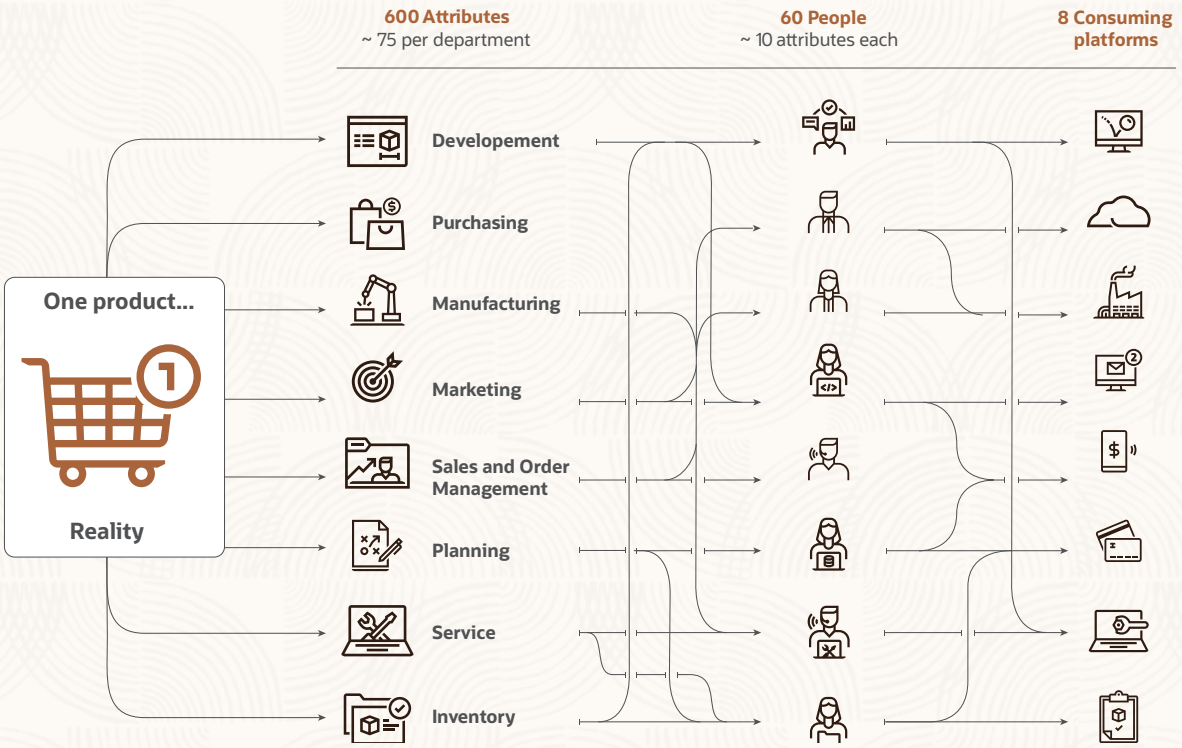
As new products and product changes flow through your organization's pipeline, how do you manage rapid setup and change of product data for manufacturing, configure-price-quote, order management, warehousing, etc.? For both new products and existing products, it is imperative that your internal operations functions work hand-in-hand with your external supply chain to manage orders, strategic sourcing, warehousing and manufacturing.

What operational challenges do you encounter when working with product master data?

With hundreds of attributes that are required to operationalize a product, there are potentially thousands of places where errors can propagate throughout the system and create costly scrap and rework. Take a simple example that shows how easy it is to introduce errors when defining product operations information. For example, a product that has:

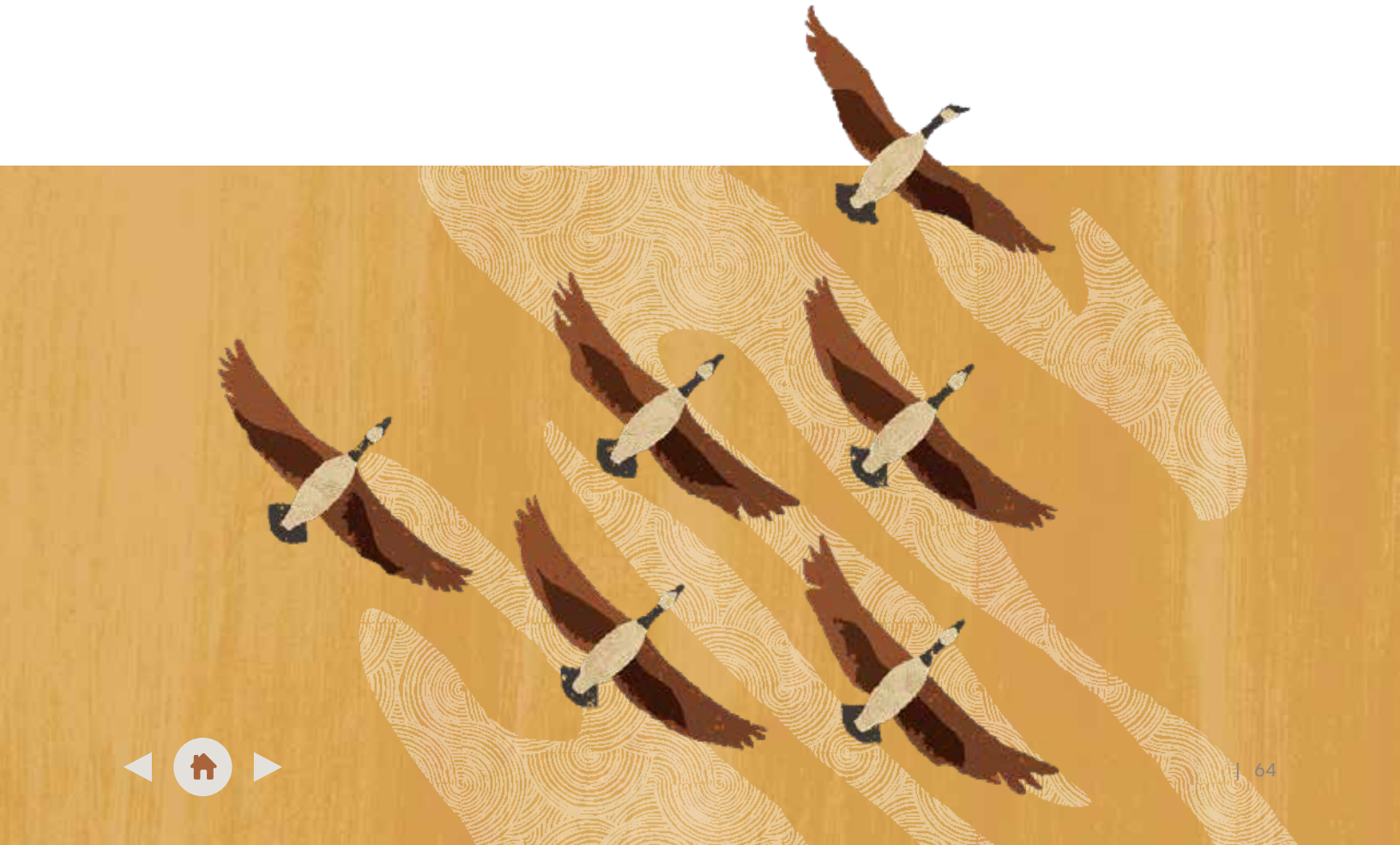
- Five different product operations attributes that must be set uniquely
- Each operations attribute has a unique 3 choice drop-down menu pick
- This results in 243 possible combinations for how these attributes can be selected!

In the real world, data flows across organizational boundaries



Beyond the verification and validation of operations information, some of the most common challenges encountered in operationalizing items include:

- **Managing multi-facility organizations—**The ability to setup common or connected item identifiers and part numbering so to take advantage of economies of scale. If this can be accomplished, planning and scheduling can share inventories to eliminate waste and expedite customer deliveries.
- **Early collaboration around the item creation process—**Manufacturing Engineers need the ability to secure tooling and prepare routings as early in the process as possible. Shop supervisors want to train early and ensure that the organization is producing quality products.
- **Early collaboration with the supply chain—**Outsourced manufacturers need the ability to receive information and ramp up to production as soon as possible. There must be open communication and collaboration between operations and the supply chain.
- **Providing buyers with the information they need to get quotes and secure prototypes—**Planners and buyers require the ability to setup all required attributes in the item master to synchronize planning and buying and to optimize lead times.
- **Order management and marketing teams need to manage sourcing rules—**These teams can ensure sourcing rules are setup to reflect origin of product delivery. They must also ensure pricing and discounting are all predefined and determine if any cross-sell and up-sell definitions must happen.
- **Inventory control management teams ensure locators are adequate—**The ability to manage specific inventory control tags and locators for unique situations; for example:
  - Cooling requirements for a specific part
  - Inventory that must be handled with additional care for safety reasons
  - Setting expiration dates and times on materials that expire

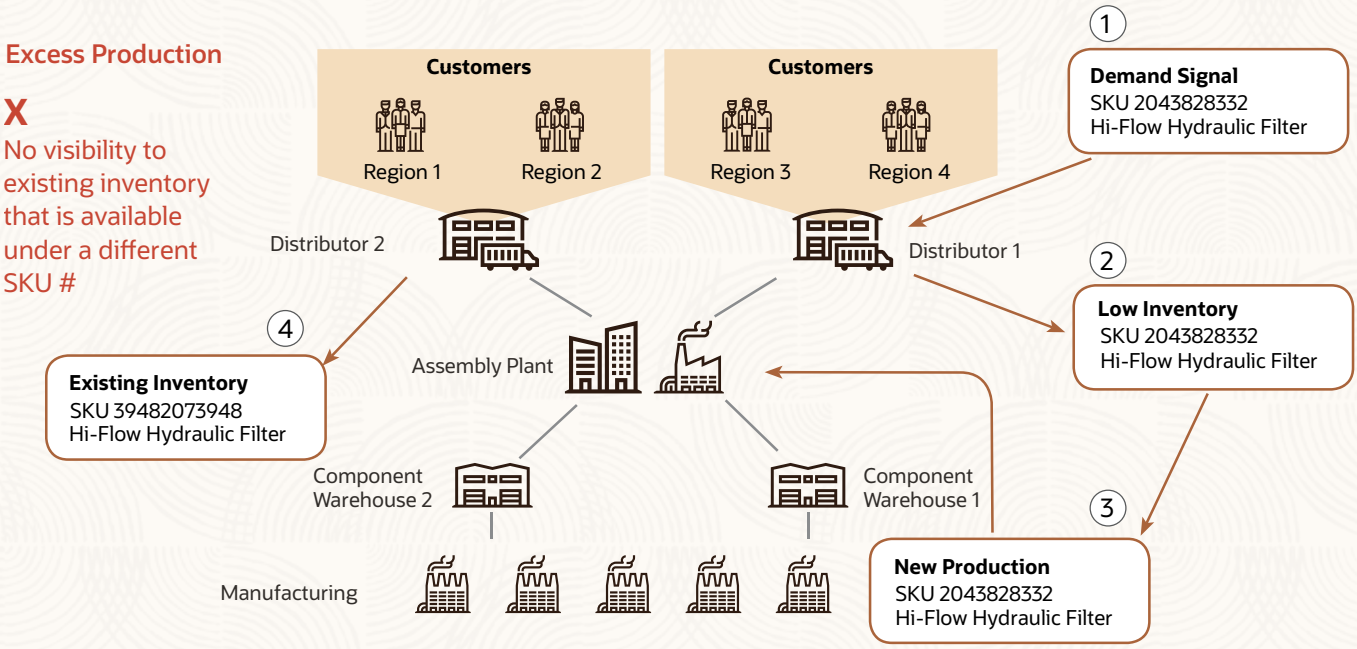


How do you enable visibility into production and inventory across your enterprise?

Lacking a reliable item master can create excess production and inventory as illustrated below.

Lack of SKU cross referencing creates excess production and inventory

Challenges without product data mastery...



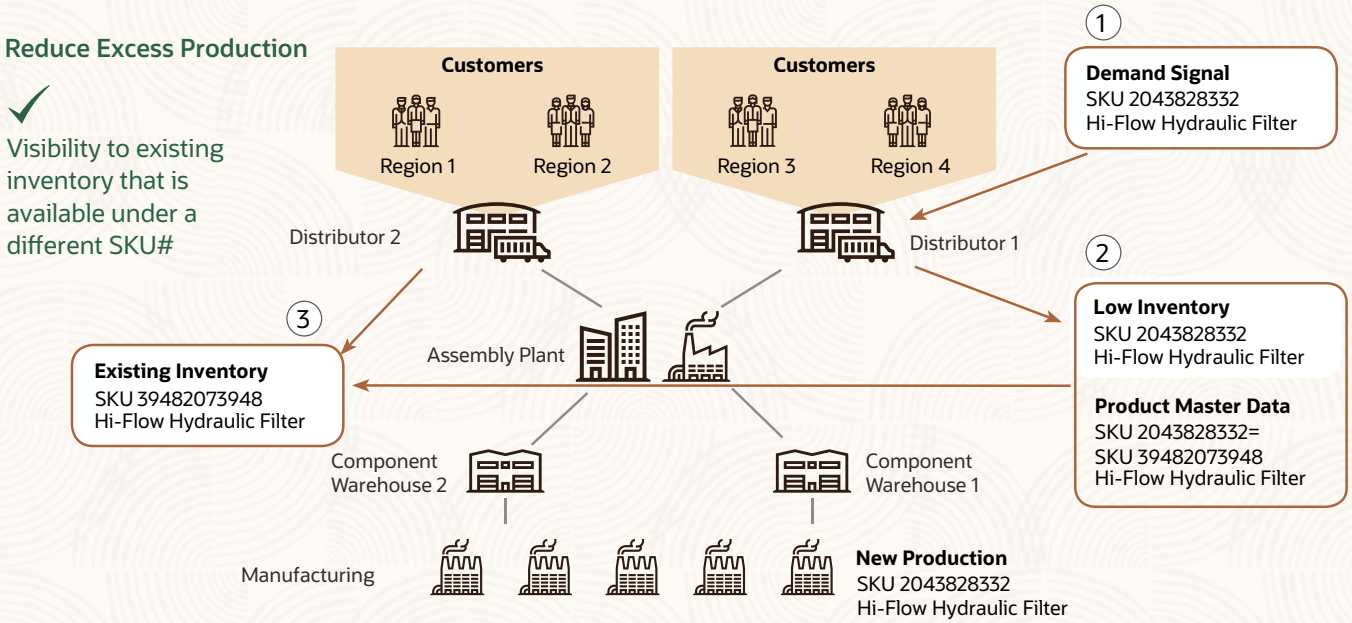
This example shows:

1. **Distributor 1** receives a demand signal for **"SKU2043828332 Hi Hydraulic Filter".**
2. 2. Based on their inventory control system item data, they detect **Low Inventory for "SKU2043828332 Hi Hydraulic Filter".**
3. 3. Since their inventory is low, they submit an order for **New Production of "SKU2043828332 Hi Hydraulic Filter"** to the Assembly Plant.
4. This expensive **New Production** order could have been avoided. Due to a lack of Product Data Mastery, **Distributor 1** does not realize that Distributor 2 has a compatible **"SKU 39482073948 High Flow Hydraulic Flt"** because it is managed under a different SKU number and description.

Product data mastery streamlines this business process and reduces costly step #3.

The ability to establish relationships between SKU, part, and item numbers is a key principle of product data mastery

Benefits of product data mastery...



This example shows:

1. **Distributor 1** receives a demand signal for **"SKU2043828332 Hi Hydraulic Filter".**
2. Because their inventory control system receives cross reference data published from the **Product Master Data,** they realize that **Distributor 2** has equivalent production inventory -**"SKU 39482073948 High Flow Hydraulic Flt"** managed under a different SKU number and description.
3. **Distributor 2** ships the product to the customer, thus avoiding costly production at the Assembly Plant.

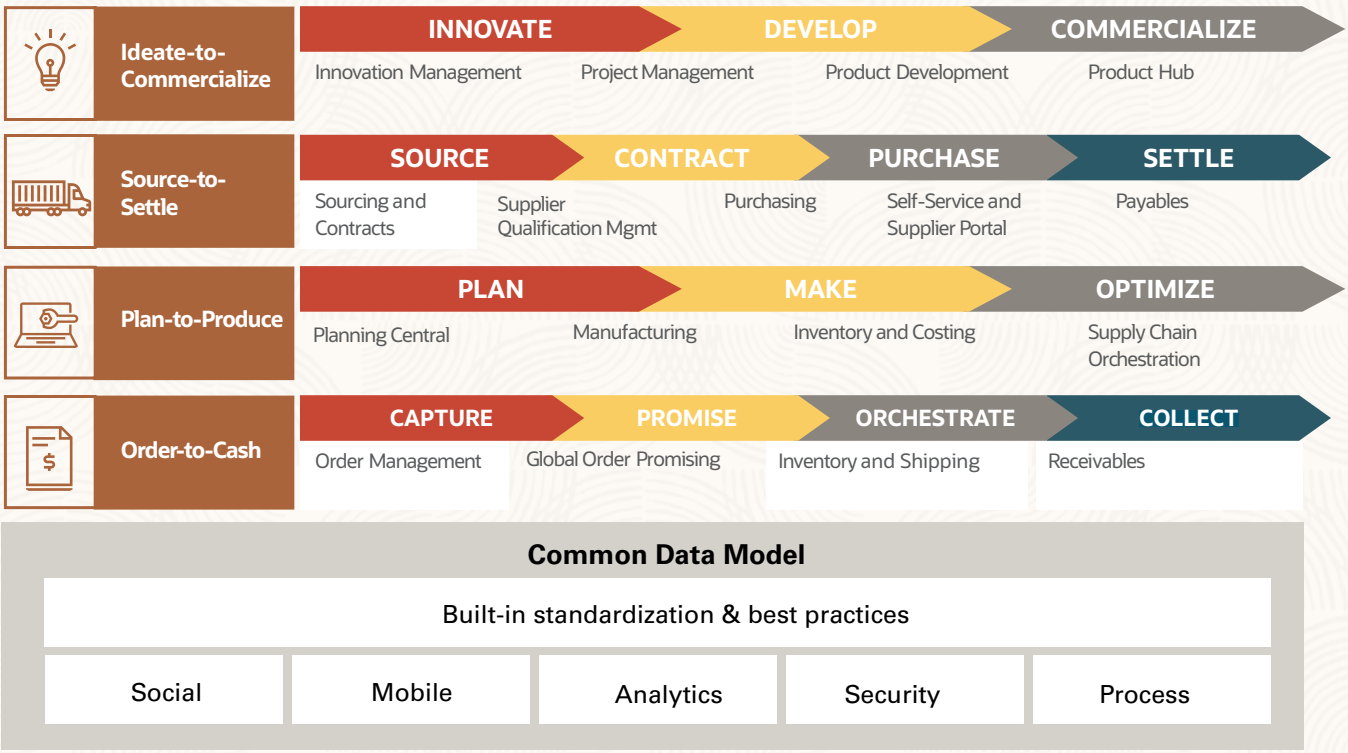
Does bad data create frequent scrap and rework?

It is important to note that Operations can provide much of the justification for implementing a product master data management solution. It is typically operations that can quantify any scrap, rework, excess inventory, and excess production created as a result of bad or latent product data. It is operations that often notices the impact of the initial "ripple effect" of bad item data later becoming a flood of bad data in the production process. Look for hard-dollar savings and real-life examples that have increased cost of goods sold.

As the graphic, on the next page, shows, the operations and commercialization process is driven by product master data management which then drives the plan-to-produce cycle. For this reason, it is important to work with a vendor that not only understands MDM, but also the entire ideate-to-commercialize and plan-to-produce supply chain flow.

Product data mastery has a direct impact on key modern supply chain flows

Modern supply chain flows



Best practices for supply chain readiness

The required consistency, flexibility, and speed needed to support supply chain efficiency is enabled by product data mastery.

1. **Release design for production—**Manage sign-off process and monitor status via dashboards. Simplify task coordination through secure social collaboration
2. **On-Board Released Products—**Add the new product, component and structure definitions to the company-wide central repository. Automatically validate data based on preset requirements and send exception notifications
3. **Add Supply Chain Attributes—**Collaborate to set item classification and parameters governing production, purchasing and fulfillment. Allow organization specific settings and definitions. Route tasks and approvals to relevant stakeholders only.
4. **Ensure product readiness—**streamline stakeholder review and validation via dashboards and secure social collaboration. Set access privilege based on individual/organization/facility authority. Apply change control as needed.
5. **Propagate product information—**propagate product records to designated organizations including warehouses and plants. Automatically synchronize updates from the master
6. **Manage on-going changes—**adjust item settings and definitions for new requirements. Enforce change control processes based on pre-set rules.
7. **Enable steps 1-6 through modern cloud-based supply chain platforms—**use cloud, mobile, analytics and social to streamline these process

Learn more—paths to data mastery
How an industrial manufacturer streamlined product development
(Customer Success)

Procurement and inventory supply chain

How do you enable visibility into what you are procuring across various company divisions?

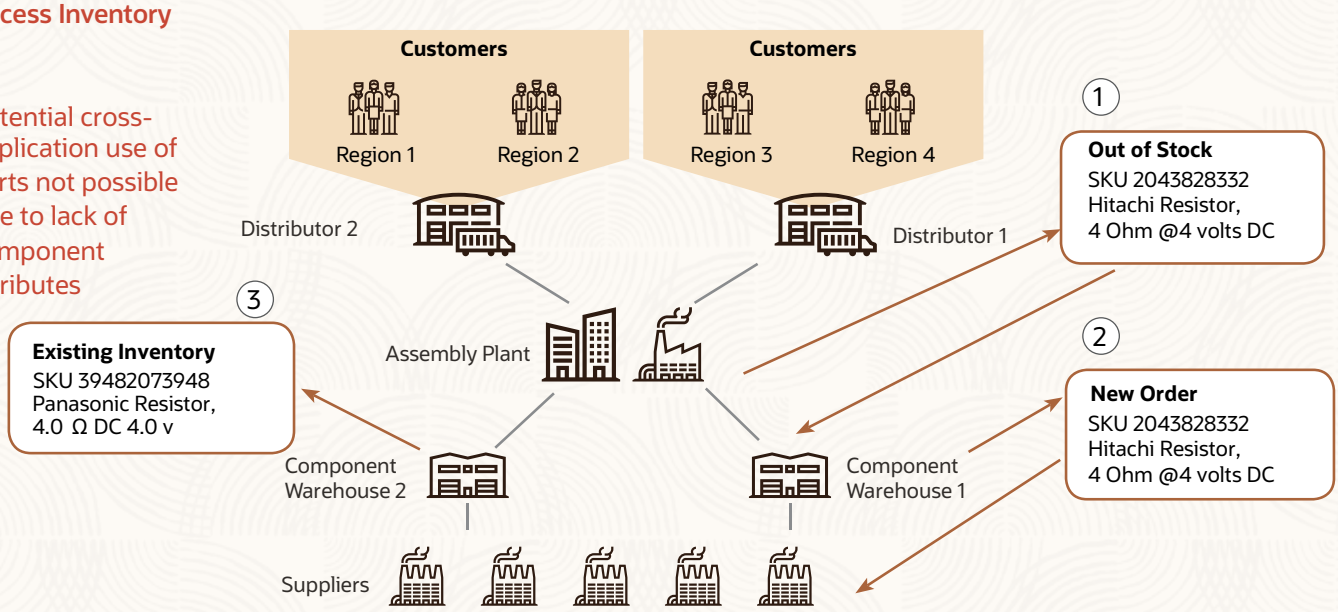
Most companies have distributed procurement and inventory operations that work across the organization, sometimes globally. Suppliers often vary depending on the geographical location of purchases relative to production. While sourcing inventory in this manner provides availability to the closest production source, it also creates a potential increase in inventory carrying cost, due to lack of cross-referencing between inventory item numbers. The example below shows how this can happen:

Lack of true inventory visibility increases inventory spend and carrying costs
Challenges without product data mastery...

Excess Inventory

X

Potential cross-application use of parts not possible due to lack of component attributes



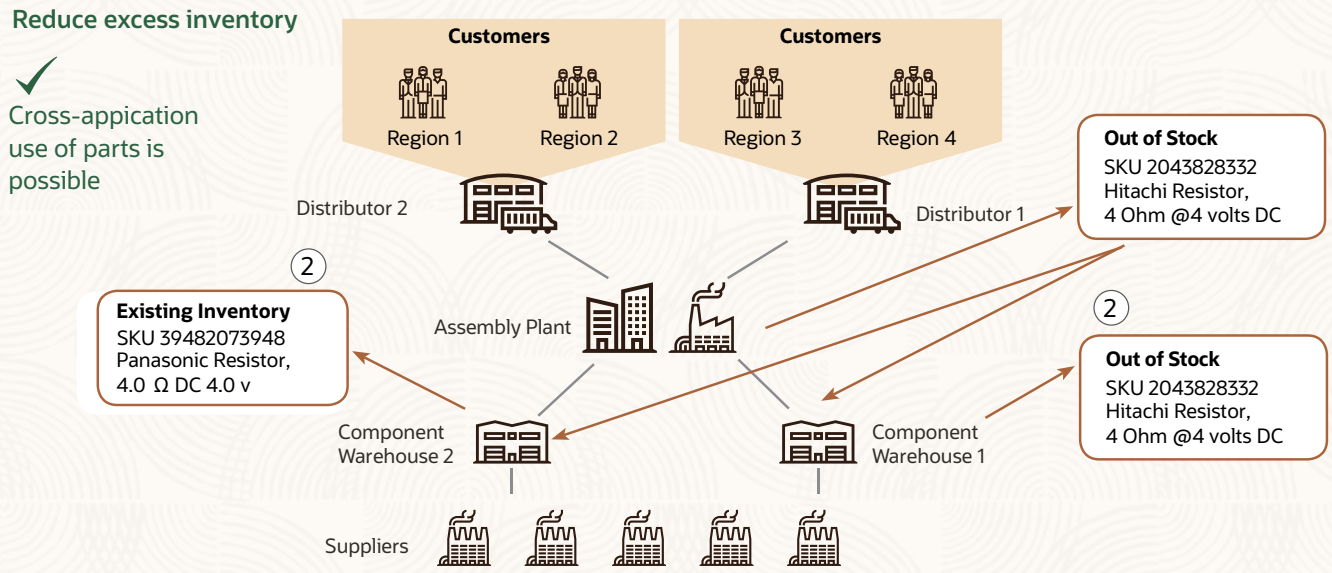
This example shows:

1. **Distributor 1** is out of stock **"SKU2043828332 Hitachi Resistor 4 Ohm @ 4 volts DC".**
2. 2. They query their warehouse inventory and realize that the warehouse is also out of stock. So they place a New Order with their local supplier to restock **"SKU2043828332 Hitachi Resistor 4 Ohm @ 4 volts DC".**
3. Unbeknownst to **Distributor 1, Distributor 2** had identical inventory in stock, stored as a different SKU number and description – **"SKU39482073948 4.0Ω 4.0v".**

Had **Distributor 1** been aware of this identical inventory, they could have avoided placing the order for additional new inventory and increasing the company's inventory carrying costs. An example of how product data mastery enables this type of inventory rationalization is shown below.

The ability to establish relationships between inventoried SKU's is key principle of product data mastery

Benefits of product data mastery...



This example shows:

1. **Distributor 1** is out of stock "**SKU2043828332 Hitachi Resistor 4 Ohm @ 4 volts DC".**
2. **Distributor 1** searches their warehouse inventory and realizes that the warehouse is also out of stock. Through product data mastery (i.e. managing relationships between inventory SKU items) they see that **Distributor 2** has identical inventory in stock, stored as a different SKU number and description – **"SKU39482073948 4.0Ω 4.0v".** They therefore place an internal inventory move order to acquire the resistors, and avoid purchasing excess inventory.

Streamlining inventory and procurement processes around a centralized inventory item master creates significant hard-dollar savings for the business by:

- Providing consistent, rationalized purchased product, and supplier data across organizations and systems.
- Rationalizing product and service spend across organizations and systems
- Aggregating purchasing across divisions to drive better purchasing contracts
- Enabling accurate inventory reporting
- Strengthening your negotiation position and preventing unnecessary purchases
- Ultimately reducing procurement spend (1% to 5% reduction is typical)

Learn more—paths to data mastery
How an industrial manufacturer streamlined product development
(Customer Success)

Marketing

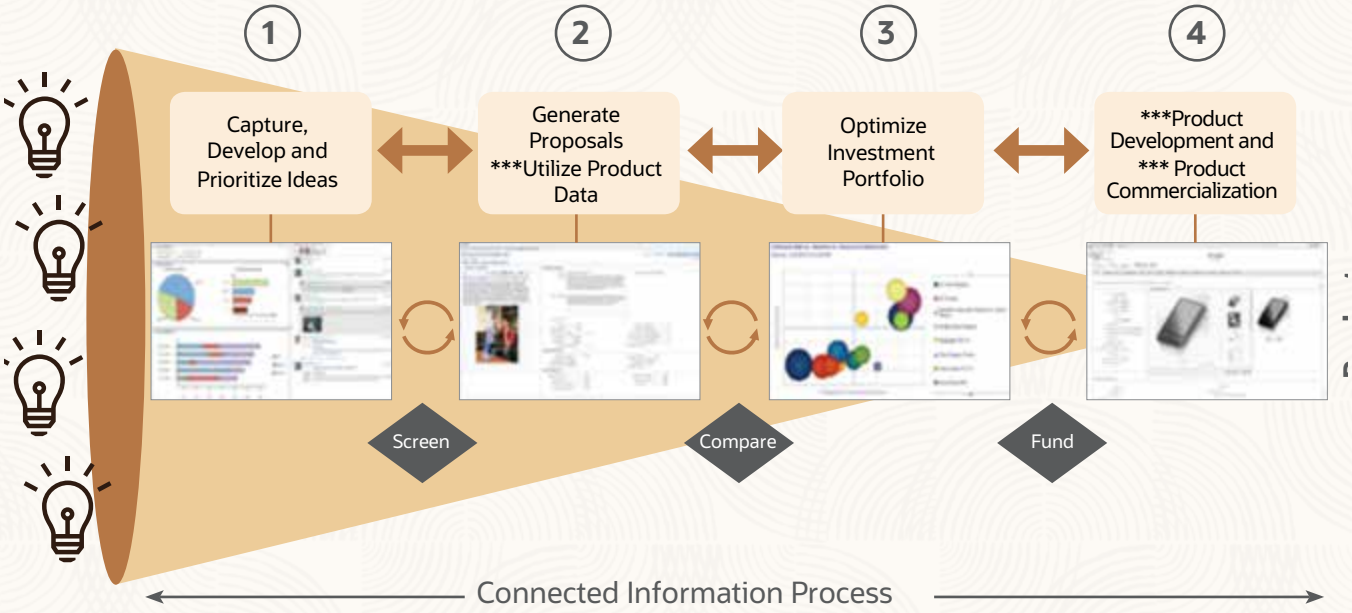
Are you able to translate marketing requirements into product master data efficiently?

Development of marketing requirements and analysis starts well before the authoring of product master data. Marketing organizations are tasked with figuring out what to sell, who to sell it to, where to sell, and how to price. These decisions are made at the beginning of the process, and typically "thrown over the wall" to design once the development process begins. From this point, development becomes a "black box", until the project nears a prototype phase. Then during the prototype / early product release phase, marketing is brought back into the project to verify that the initial requirements of "what, who, where and how" have been met. This is typically when authoring of sales readiness information becomes part of the product master data conversation.

A better approach is needed

Let's start at the beginning of the process, when marketing and business requirements are developed. These typically come from internal sources, crowdsourcing initiatives, social monitoring, customer engagement, focus groups and other sources. The issue is often that this data is stored in multiple spreadsheets, documents and emails that are disconnected from product data. A better approach is illustrated below:

Four stages of the innovation funnel...*
Innovate



* Product master data is often utilized and established in stages 2 and 4

Following the steps illustrated above, work with a solution provider that enables:

1. An integrated solution to capture ideas from a variety of sources (customers, internal stakeholders, crowd-sourcing, social monitoring, etc.) and translate them into proposals that include marketing and business requirements.
2. A solution that can develop realistic proposals based on:
   - Existing Product Master Data: For example, you might introduce a new holographic tablet design that utilizes a CPU used in other devices your company currently sells. The ability to search for and analyze existing components for cost, quality, availability, manufacturability and price early in the process reduces time-to-market and enables right-to-market.
   - Detailed marketing requirements: For example, the regions the product will be sold in and the corresponding labeling, compliance, language and regulatory requirements. This content will become part of your product master data moving forward.
3. Provide executives and marketing professionals with decision support tools that enable the ability to decide in which new products and services to invest.
4. Quickly move to the product commercialization and sales readiness phase which will instantiate some of the key decisions outlined in the proposal phase (step 2), including—labeling, product variations, up-sell, cross-sell, and sales channels.

Omni-channel commerce requirements for 21st century commerce

Establishing and collaborating on this content during the innovation phase and seamlessly transitioning to the sales readiness phase, is a best practice for streamlined omni-channel commerce. For example, a marketing team might be responsible for:

- 100 unique sales, order management, and marketing attributes
- 20 different packaging designs (in 6 languages)
- Instruction manuals (in 6 languages)
- Publication to a dozen different e-commerce and catalog platforms.
- Industry requirements such as GDSN and UDI
- Upsell, cross-sell, and promotional information
- Meeting customer expectations for differentiated products and customer experiences based on how they want to buy (mobile, web, catalog, brick, and mortar)
- Decommissioning when a product is discontinued.

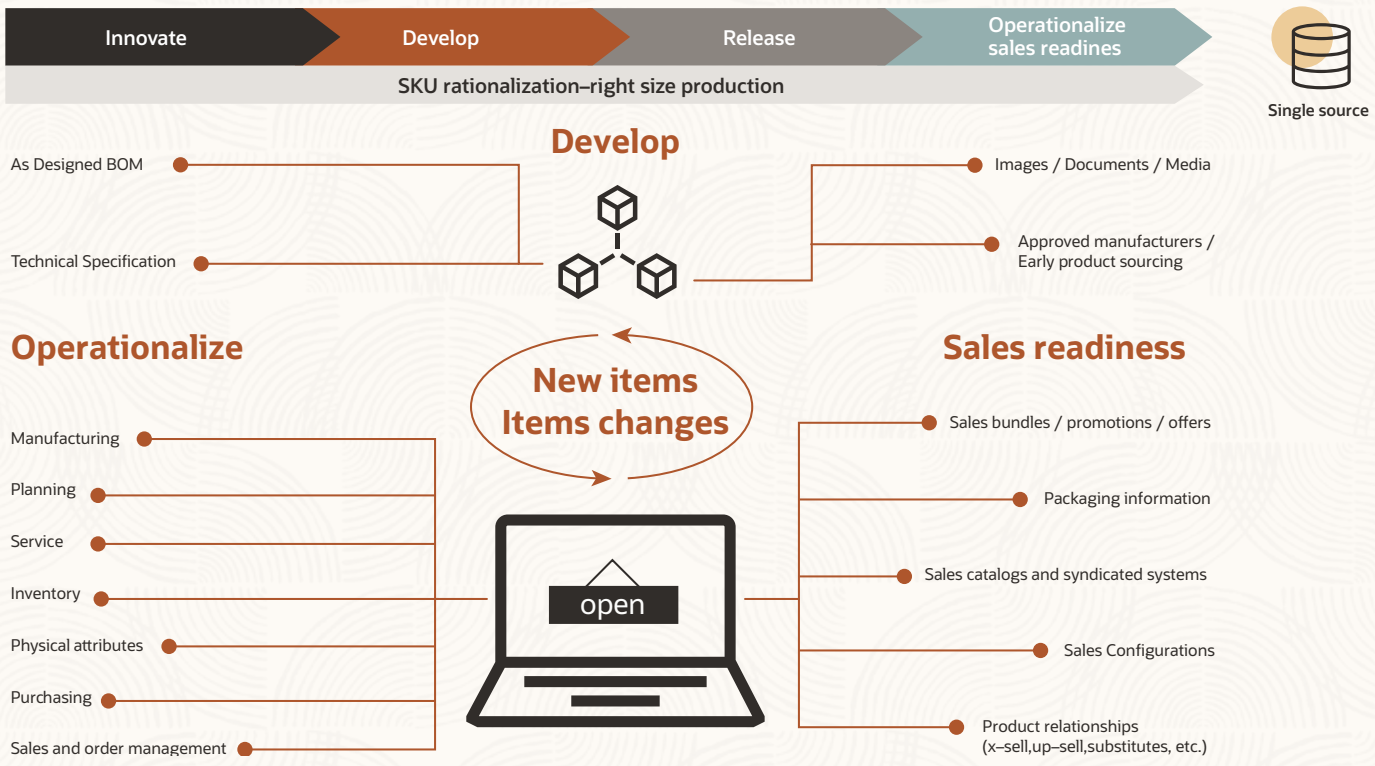
A product MDM solution provides a single-source-of-truth for this content, as well as providing governance, change control, and data syndication.

The demands of omni-channel commerce

A leading-edge marketing process not only manages the product master data associated with these processes, but also the evolution of this data from conception to sales readiness.

This means managing the full innovation to commercialization process, with visibility into each phase of the project from conception to decommissioning.

Management of the ideate-to-commercialize process

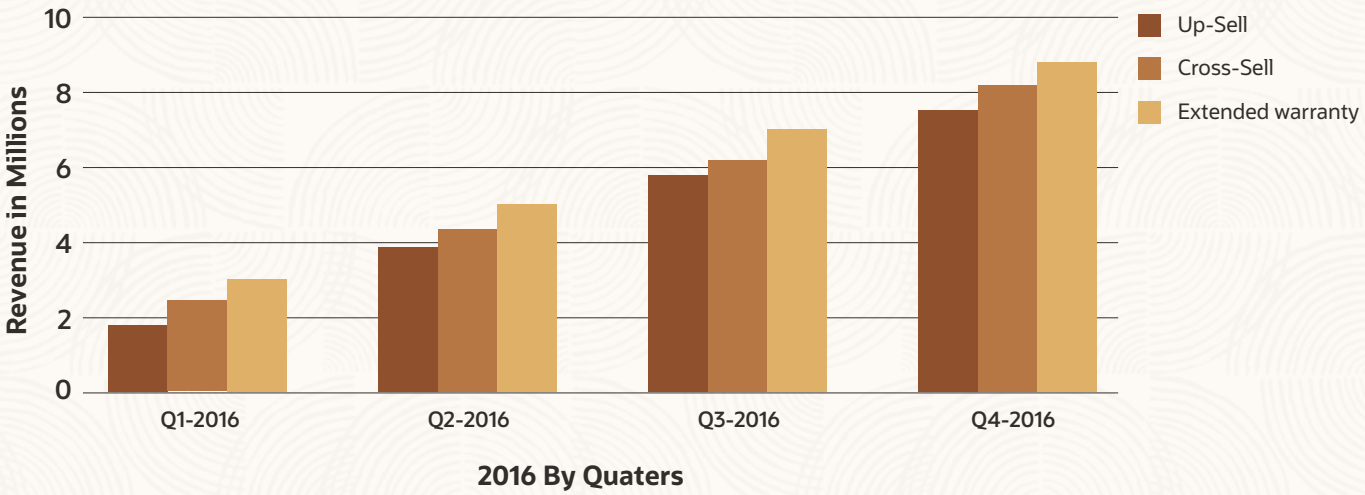


What is your level of visibility into the product commercialization process?

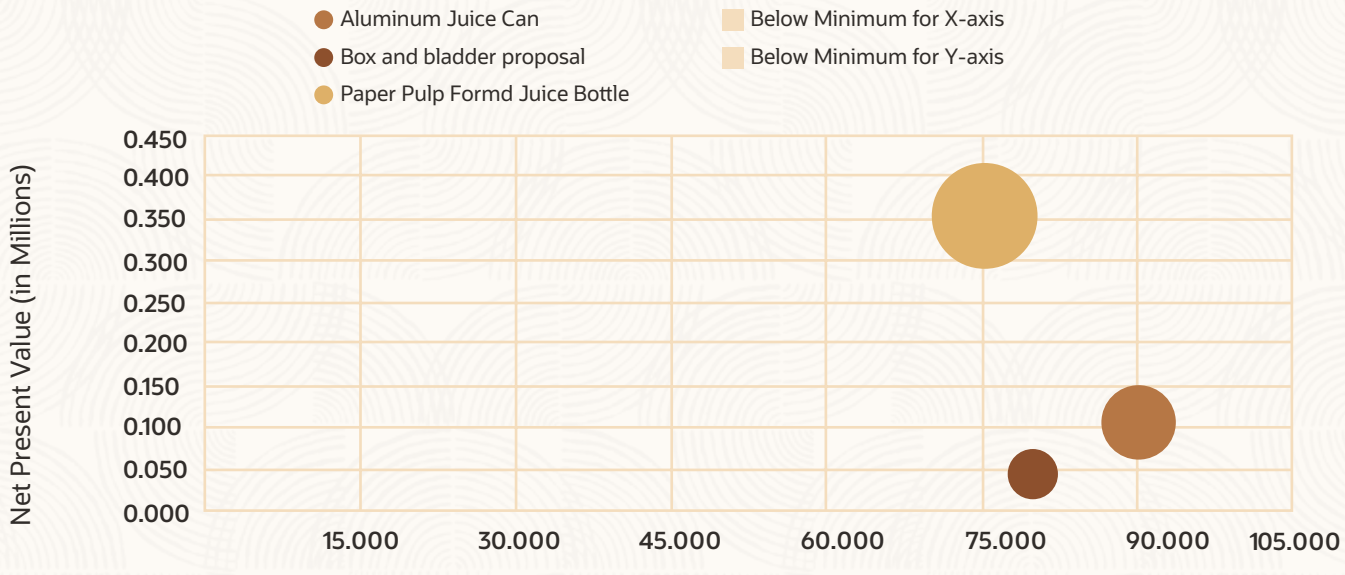
Part of the marketing challenge is understanding where you are in the process. With so many routes to market, projects and potential investments it is easy to end up with “analysis paralysis”. Real-time visibility into the status of multiple marketing projects can dramatically improve productivity, reduce time-to-market and prevent costly errors. Marketing professionals need the ability to analyze current market trends, make decisions on new areas of investment, and review the status of projects in process.

Analysis of current market trends

Revenue

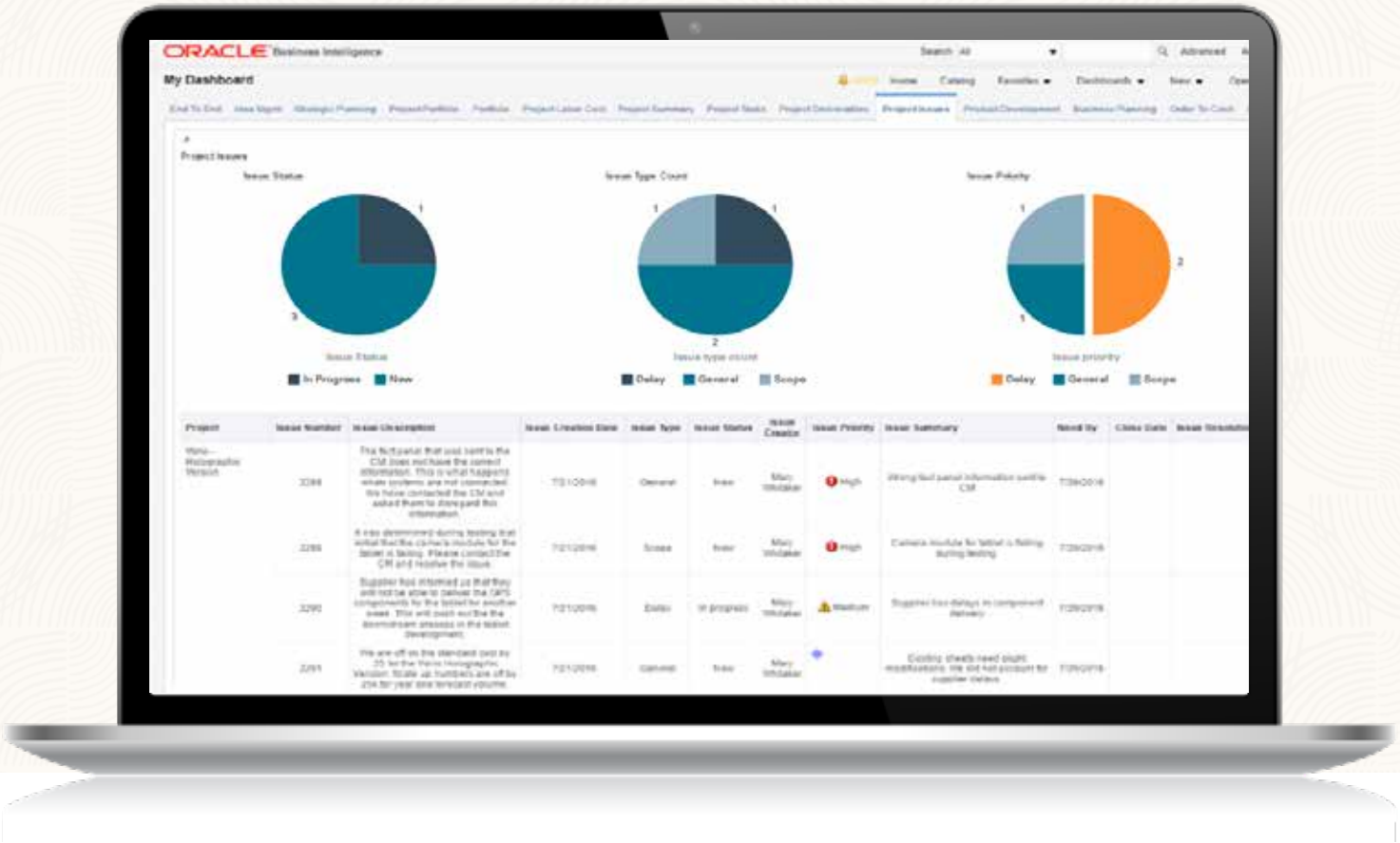


Decision support for new product investments



*Bubble size reflects resource headcount value

Tracking project execution in real-time



Learn more—paths to data mastery
How a retailer tamed its chaotic new product introduction process
(Customer Success)

Path to mastery—Industry

Life Sciences

The life sciences industry faces challenges of heavy regulation and long development cycles that require massive R&D investments. The costs of bringing a new drug to market have increased at an exponential rate over the past few decades. It is not uncommon for a pharmaceutical company to spend more than $1 billion to introduce a new drug, and this process can take over 10 years. Medical device manufacturers regularly spend $100 million to bring a 510(k) product from concept to market. In addition to the significant costs and long timeline, life science industries also have to invest heavily to meet FDA and EMA guidelines. **Given these challenges, product data mastery is a must-have competency for life sciences organizations because it will have significant impact in reducing costs and time-to-market.**

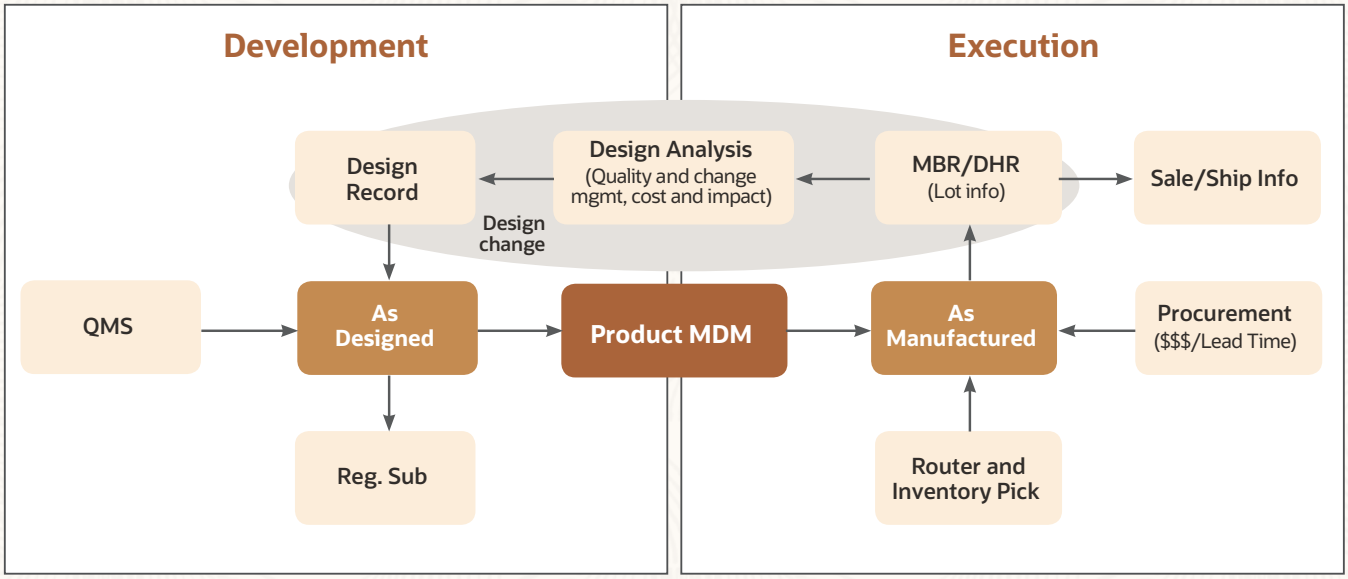
Product Data Mastery for Regulatory Requirements

Much of the inherent costs of life sciences product development is driven by the sheer volume of regulatory data that must be created, managed and tracked. New drugs, new drug applications and medical devices must all pass multiple regulatory gates in order to be released on-time and on-budget. Frequently organizations waste significant time and money when these regulatory requirements are not met. All life sciences regulatory requirements can be boiled down to a single concept – all product information (design, production, manufacturing, etc.) must be managed, auditable, traceable, secured and reportable. This concept manifests itself in a few different forms depending on the sub-industry and use case. Here are a few examples:

- **FDA requirements for Unique Device Identification (UDI) in medical devices—**This act requires that specific classes of medical devices to be labeled with a unique label that identifies the device through distribution and use. The serial number included on the label is specified by the FDA for analysis, recall tracking and patient safety. Product MDM enables medical device manufactures to meet UDI requirements by providing a central location to source, cleanse, manage, approve and publish UDI data to FDA GUDID databases and GS1 data pools.
- **FDA inspections of pharmaceutical and medical device and facilities—**Provisions of Title 21 of the Code of Federal Regulations (for example 21 CFR part 11) requires that organizations implement proper electronic records controls for traceability, security, and ultimately auditability by the FDA. Product MDM enables organizations in the life sciences industry to meet rigorous audit requirements by consistently providing the data governance and change control that records the "who, what, when and how" of data creation. Audit trails, redline changes, change control, security, verification and validation are all core functionality of a Product MDM solution.
- **Approval by international regulatory bodies—**There are several regulating bodies (FDA, EMA, WHO, etc.) and hundreds of industry regulations (CE Mark, REACH, RoHS, etc.) that all require life sciences organizations to implement best practices around product master data creation, auditability and governance.
- **Reducing the cost of record keeping—**Continuing pressure to reduce reliance on paper-based records; improved efficiency in management of electronic records and metadata

As the illustration shows below, product master data management serves as the central information hub for all of the development and execution data collection, tracking and traceability required to meet these challenges.

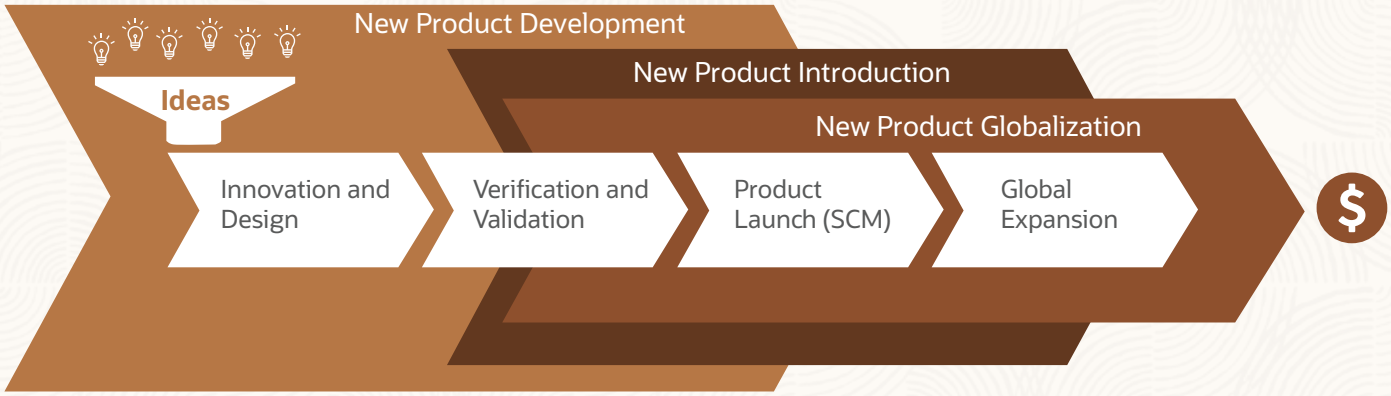
Automation of the development-execution process synchronizes the IT platform to provide compliance integrity and business efficiency



Product data mastery for new products

Beyond managing the inherent risk that the life science industry faces, product data mastery is also a must-have for advancing through the billion dollar new product development, introduction and globalization lifecycle. This includes the ability to support integrated R&D and regulatory processes, establishing a globalized, scalable and secure supply chain and ramping up for global expansion with streamlined market registration.

Seamless execution of the business process and dataflow in one system



A core use of a product MDM solution is the ability to manage the product structure and/or ingredient lifecycle for a new product. In the pharmaceutical industry this means managing the product formulation throughout the development and commercialization phases of a project. Product MDM provides a single source of visibility into how pharma ingredients will be sourced globally and regulated throughout the supply chain. Similarly, for medical devices the development of product bills-of-materials, device master records, approved manufacturers, operational information and sales readiness attributes can be managed through product MDM alone or a combination of product lifecycle management (for Design) and product MDM (for Commercialization).

Global registration and expansion is an area where product data mastery has significant impact due to the amount of country specific regulatory data that can be captured and managed for a specific SKU. The data governance, change management, and analytics provided by product MDM allows life sciences companies to create, manage, route, approve, and audit regulation content for specific markets. Product design evidence can be synchronized with product submission content. Packaging, labeling and collateral content can be synchronized with global product registration.

In navigating through these processes, engage a partner that has significant experience and investment in the life sciences industry. This partner should have experience with the entire life sciences product development and launch continuum including:

- Auditability and traceability
- Process standardization
- Process and content re-use
- Real-time visibility by all parties

Product Data Mastery for Contract Manufacturing

In order to expand R&D capabilities without increasing overhead costs, the pharmaceutical industry continues to look to Contract Manufacturing Organizations (CMOs). While this is an effective cost reduction strategy, it also poses risks in the areas of data security, intellectual property protection, cost, quality and traceability. To see how product data mastery can help to reduce this risks, review the Contract Manufacturing business drivers for a product MDM solution.

Potential Impacts of Product Data Mastery in Life Sciences

The potential impact of product data mastery in life sciences is positive and significant:

- Development cycle time
- Product introduction and globalization cycle time
- Product quality, compliance and registration costs

Learn more—paths to data mastery

How a global pharmaceutical company manages growth
(Customer Success)

Contract Manufacturing
(Business Drivers)

High Tech

The High Tech industry faces extreme pressure to drive rapid innovation cycles, quickly introduce new products and be right-to-market. Growth is driven organically through release of leading-edge products and by moving into new geographical markets. Inorganic growth is also a priority as evidenced by the high tech sector's extremely high mergers and acquisitions activity. This results in the need to support:

- Global "follow the sun" product development and support
- Frequent outsourcing and acquisition integration
- Short product lifecycles
- Increasing product variance and complexity
- Accelerated product launches and time-to-volume
- Increasing global environmental compliance and quality requirements
- Alignment of development of physical and virtual products
- Intellectual Property (IP) management and security

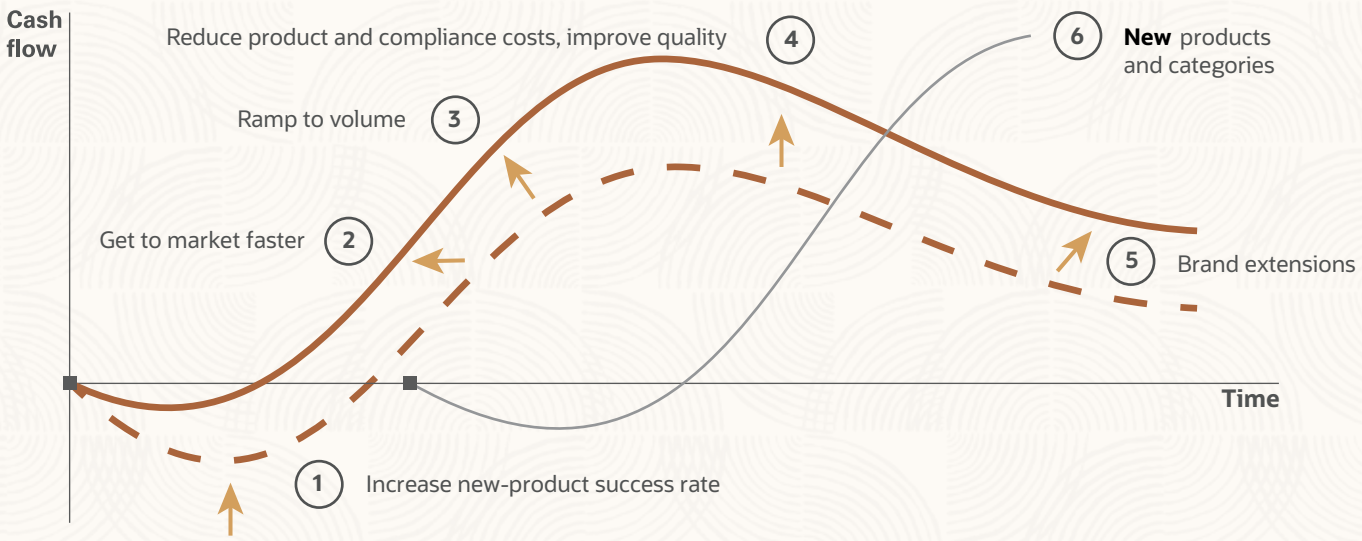
Product data mastery for product development

New product development (NPD) is the life blood of the high tech industry. NPD starts with market research, ideation, and crowdsourcing of ideas. Ideas for new product innovations must be captured and analyzed so that the right R&D investments are made. Once investment decisions are made, the design, manufacturing planning and costing processes should occur as early as possible in the product lifecycle. This is where product data mastery begins: with information setup in a timely and efficient manner to enable these processes. This requires structured new item introduction, governance and change management processes. Up-front alignment between ideation, product development and product master data shifts the product lifecycle such that:

- Companies have less negative cash flow during the development phases of the process
- Products are released to market on-schedule and on-budget
- Organizations experience greater market success than their competition by being right-to-market and first-to-market
- R&D is able to rapidly ramp-up for the next phase of new products introductions and improvements.

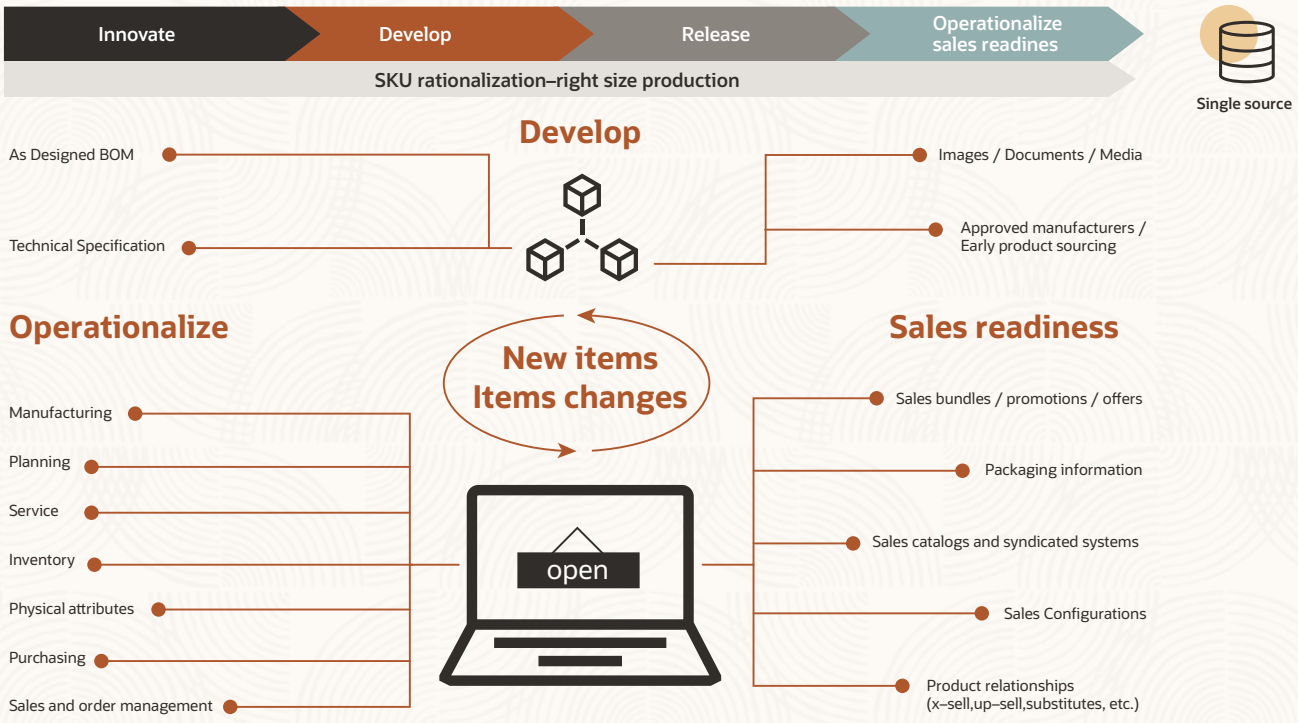
Moving the product lifecycle curve creates significant advantages

The product lifestyle curve



Product data mastery enables this by aligning product development tasks throughout the product lifecycle, from innovation, through product development, release and commercialization. As the product matures through the product lifecycle, more product information is authored. Product MDM will seamlessly integrate to innovation platforms, software development solutions and PLM/PDM platforms that provide new product information very early in the product lifecycle. In some use cases, the product MDM solution will be the first and primary source of new product data.

Management of the innovation, product development and commercialization lifecycle

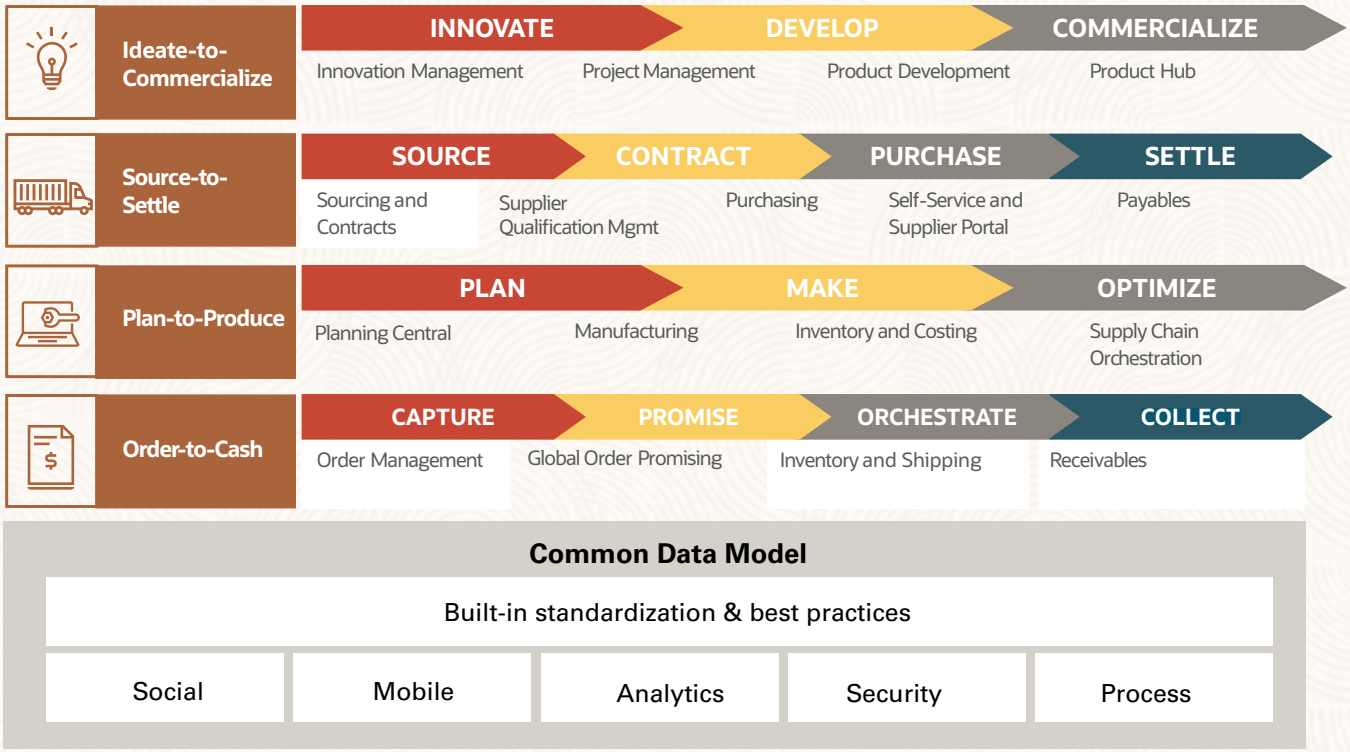


Product data mastery for innovation and product development

The innovation, product development and commercialization processes shown above form the basis of the Ideate-to-Commercialize (I2C) flow. If executed correctly, the I2C flow can have significant positive impact on Source-to-Settle (S2S), Plan-to-Produce (P2P) and Order-to-Cash (O2C) supply chain flows shown below.

Product data mastery has a direct impact on key modern supply chain flows

Modern supply chain flows



For high-tech manufacturers optimizing I2C flows begins early in the process through innovation processes that include social monitoring, analytics and collaboration to determine what the next leading-edge product should be. Specifications are developed and include:

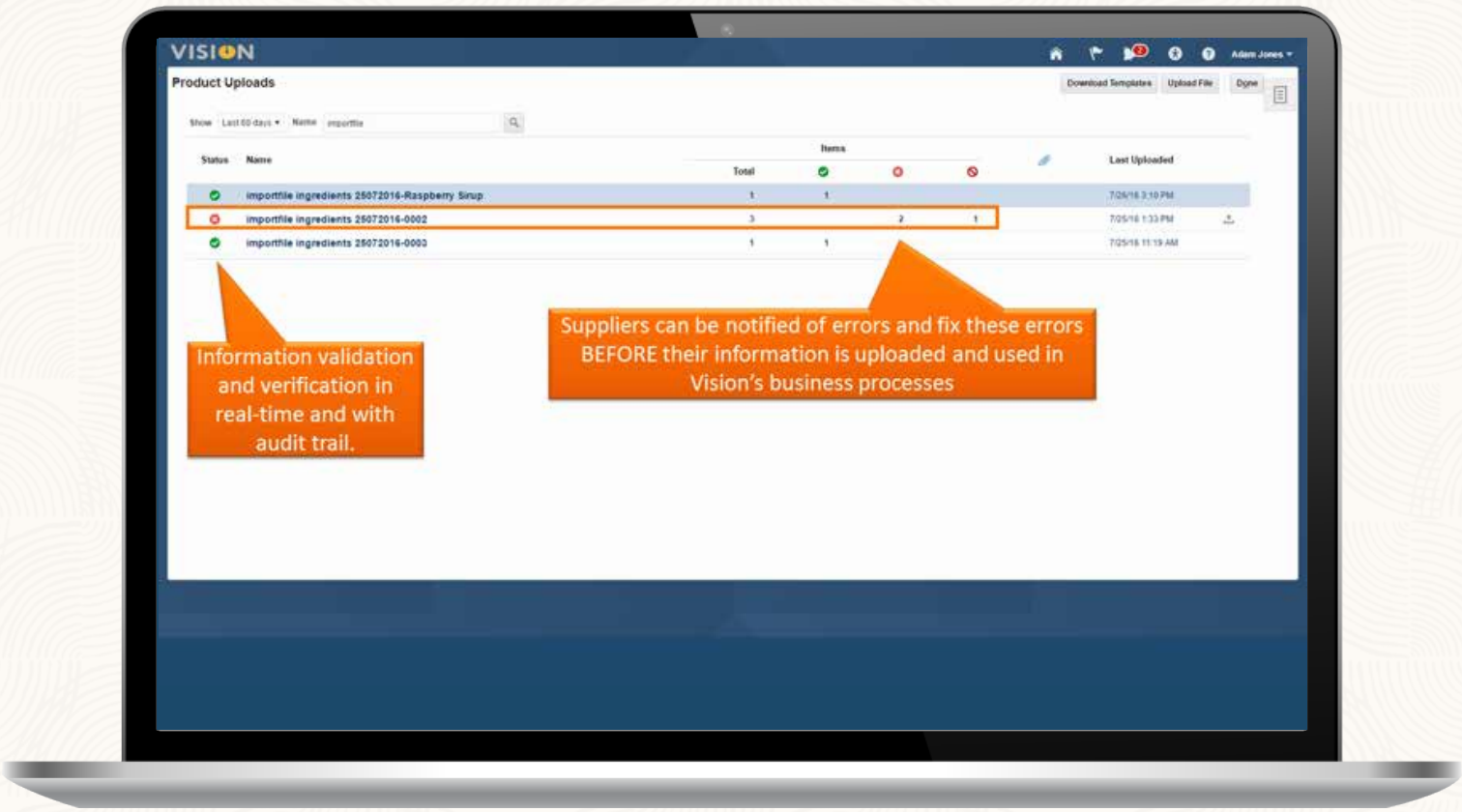
- **Marketing and business requirements—**What is the market for this new product?
- **Test cases—**How will we test this new product?
- **Technical requirements—**What technical components will be required for this new product?
- **Prototype designs—**How can we build this new product? What are the projected configurations, costs, and compliance requirements? What configurations of this product will we offer? Where have we built a similar design before?

These specifications will evolve over time and become detailed product designs that include rapidly changing Bills-of-Material, option/variant BoM's, technical documentation, planning information, marketing content and product master data. Additionally, product master data can be mined to determine if a product that uses similar components (CPU, source code, memory, firmware, etc.) has been built before and has reusable components. It is important to work with a solution partner that can not only manage product master data, but that can also manage the initial innovation and product development cycles and control how this evolves into product master data.

Product data mastery for outsourced manufacturing

In addition to synchronization of data internally, there is also the need to operationalize relationships with outsourced manufacturers. The fast movement of the high-tech market means that organizations must quickly build a supply chain for new products. Additionally, the high-tech industry relies on outsourced manufacturing to achieve cost savings and economies of scale. Very often, information needs to be shared with outsourced manufacturers before a fully defined product even exists. However, if information and process integration between the organization and its partners is inefficient and not secured this can result in decreased quality, loss of intellectual property, and longer time-to-market. A cloud-based product MDM platform makes integration of information and process flows throughout the supply chain possible by providing a single portal to ingest, publish, secure and share product design data with the supply chain.

Provide outsourced manufacturers with an easy-to-use cloud / web-based portal to upload and download content



Product data mastery for data verification and validation

Regardless of the path new product data takes within the organization, there must be data verification and validation to prevent expensive engineering change orders, scrapped product or in worse case scenarios, poor quality product entering the marketplace. A single quality issue in a new product release can cause an entire product line to fail, ruin the reputation of a company, and destroy millions of dollars in shareholder value. The data quality checks provided by a product MDM solution help to prevent bad data from flowing to downstream manufacturing and supply chain operations.

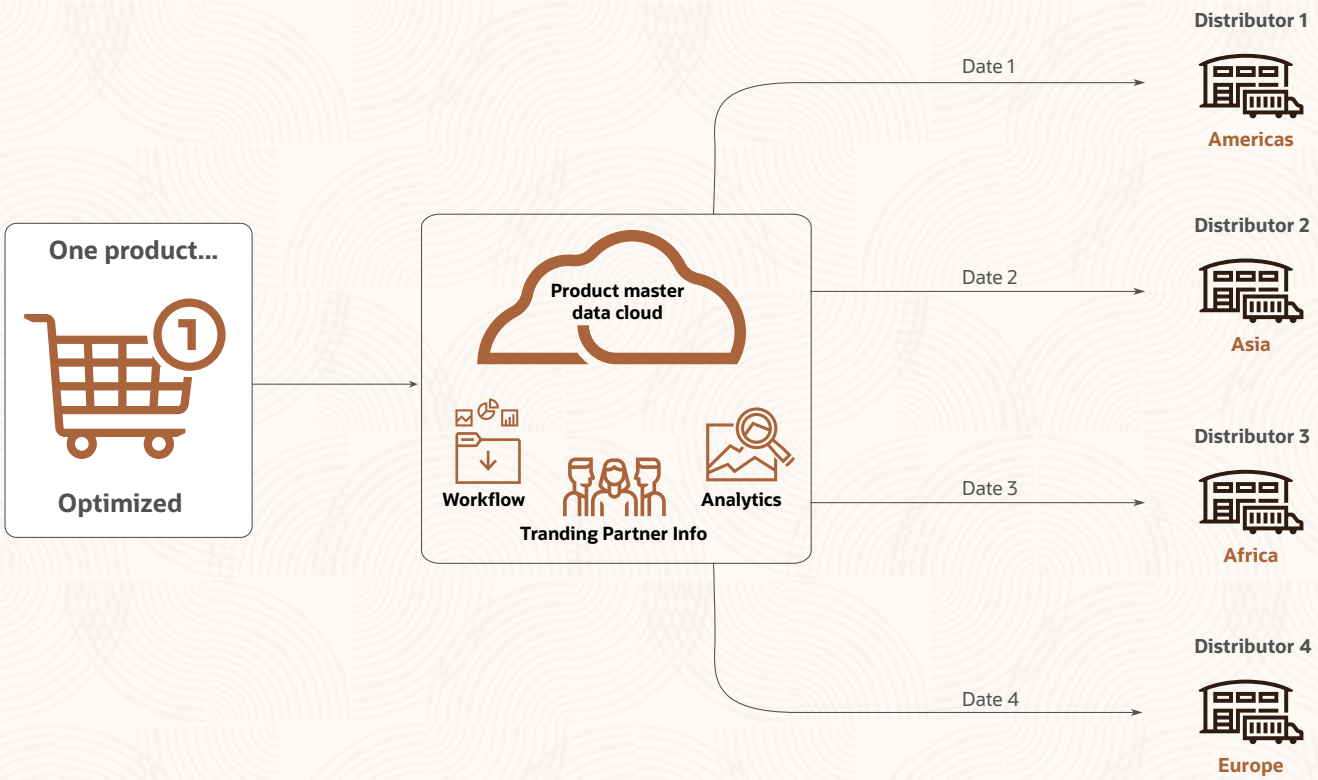
Product data mastery for compliance and traceability

In addition to traditional product centric information that must be managed there are specific attributes for compliance and traceability that must be governed. High tech manufacturers are under increasing pressure to account for the materials that they put into their products and how they are tracked. Common regulatory information that must be managed include REACH, RoHS, Conflict Minerals and other international information standards for product safety. For example, there are over fifty country-specific toy safety regulations worldwide. Product data mastery includes the organizational ability to define required safety and compliance information, track its creation/approval, and control its publication.

Product data mastery for product decommissioning

In a market where products become obsolete quickly, it is important that product decommissioning processes are managed and automated. Without a product MDM solution it is virtually impossible to do this because the information and architecture required to publish decommissioning information throughout the supply chain is lacking. Just as a product MDM solution can capture and selectively publish all the product commercialization information at the beginning of the product lifecycle, it can use this same data publication capability at the end-of the product lifecycle to obsolete a product.

Use product MDM to prevent distributors from selling discontinued products by region



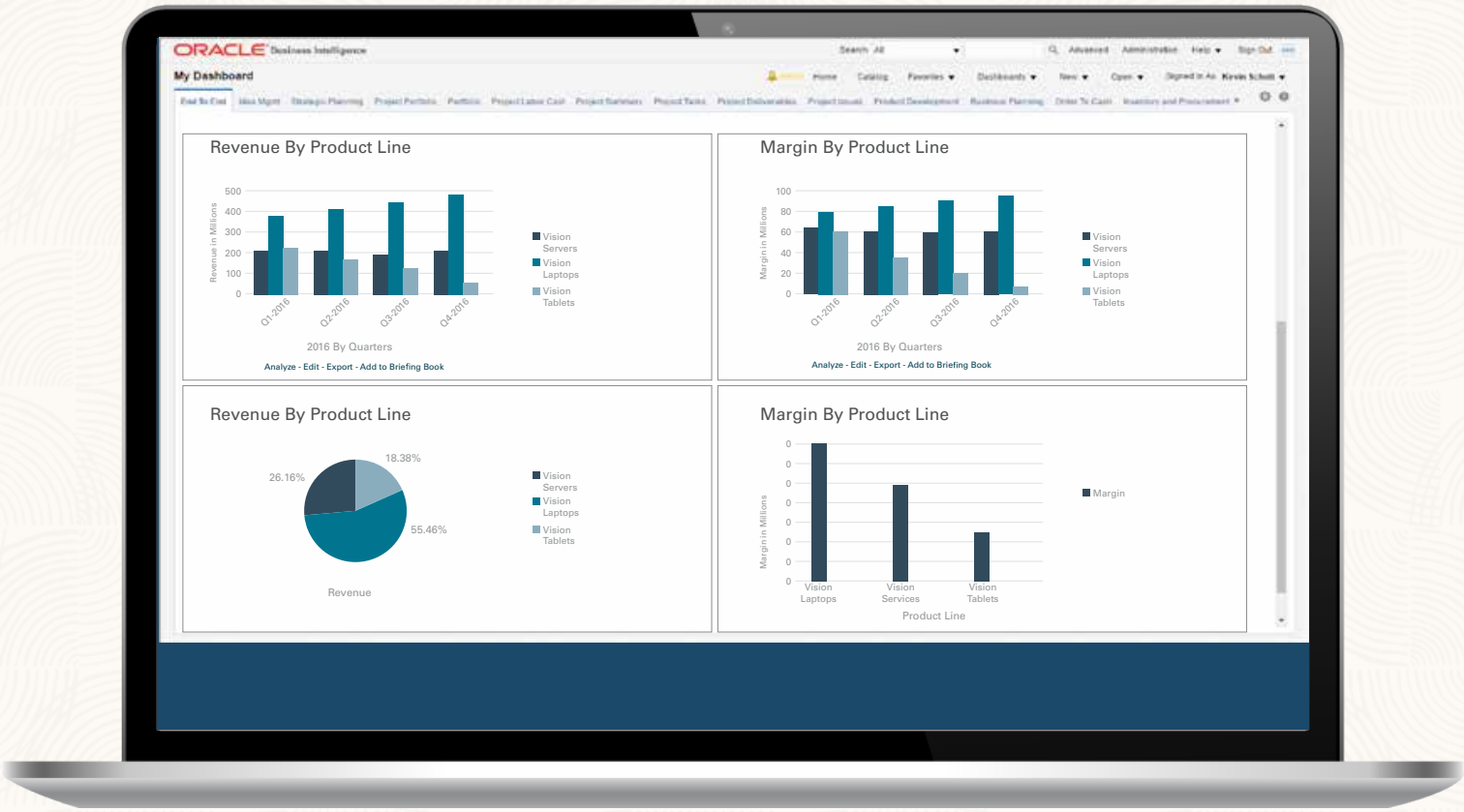
As the illustration above shows, there may also be nuances in how and where a product is decommissioned. For example a product that is no longer sold in the United States may still be available for sale in Asia due to differing technology standards. The ability to have granular control over how products are decommissioned is a key component of product data mastery.

Potential impacts of product data mastery in high tech

The potential impact of product data mastery in high tech is positive and significant:

- Product strategy development
- Product development cycle time
- Inventory carrying cost
- Profit contribution from new products
- Revenue contribution from new products
- Inventory turns
- Costs from scrap, rework, warranty and returns
- Order fulfillment

Product strategy development should be driven by accurate product financial reporting data built on a foundation of product data mastery



Related

How a global pharmaceutical company manages growth **(Customer Success)**

Contract Manufacturing **(Business Drivers)**

Product Manager **(Role)**

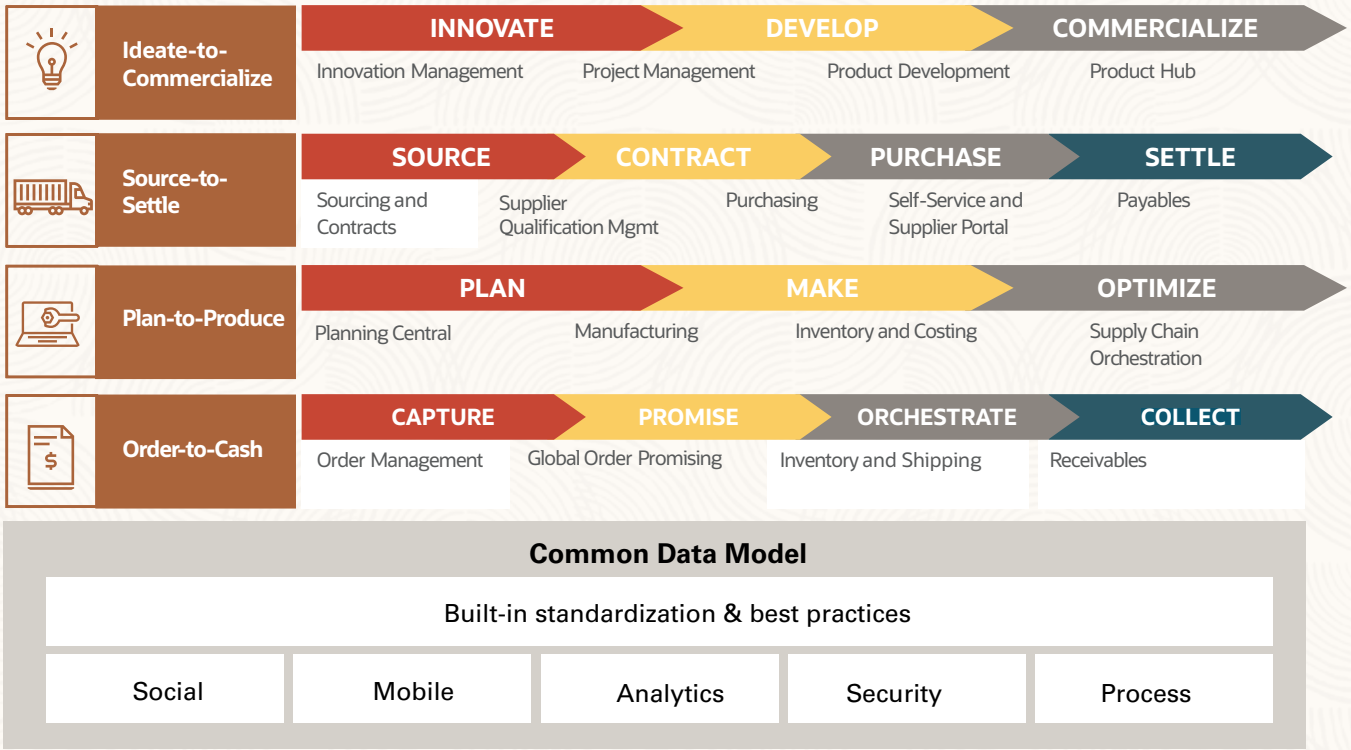
Product commercialization **(Business Drivers)**

Industrial Manufacturing

Complex global supply chains that require detailed planning to run properly is a key challenge facing the Industrial Manufacturing sector. Thus, the Industrial Manufacturing industry must enable modern supply chain flows and look to new models of interaction (cloud, mobile, IOT, social networks, analytics, etc.) to become leading edge.

Product data mastery has a direct impact on key modern supply chain flows

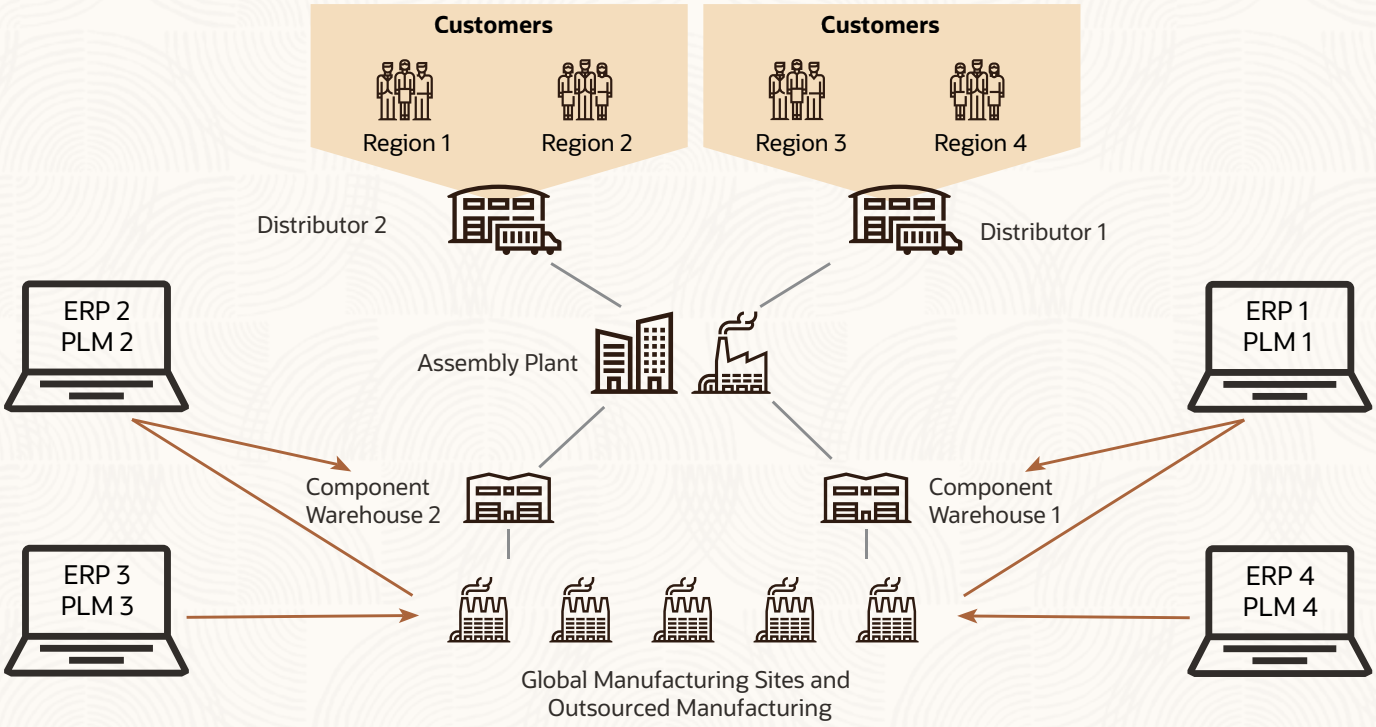
Modern supply chain flows



Because of the inherent complexity of industrial manufacturing supply chains, it is imperative that the "ideate-to-commercialize" (I2C) process is seamlessly aligned through innovation, product development, project management and product commercialization. The I2C flow encompasses traditional product development and introduces a greater emphasis on innovation at the front end of product development and the ability to commercialize quickly as the product is fully developed. The ability to manage a complex mix of manufacturing methodologies must also be taken into account very early in the process including:

- Make-to-stock (MTS)
- Configure-to-order (CTO)
  - Assemble-to-order (ATO)
  - Pick-to-order (PTO)
- Engineer-to-order (ETO)
- Global multi-site manufacturing driven by multiple ERP and PLM platforms

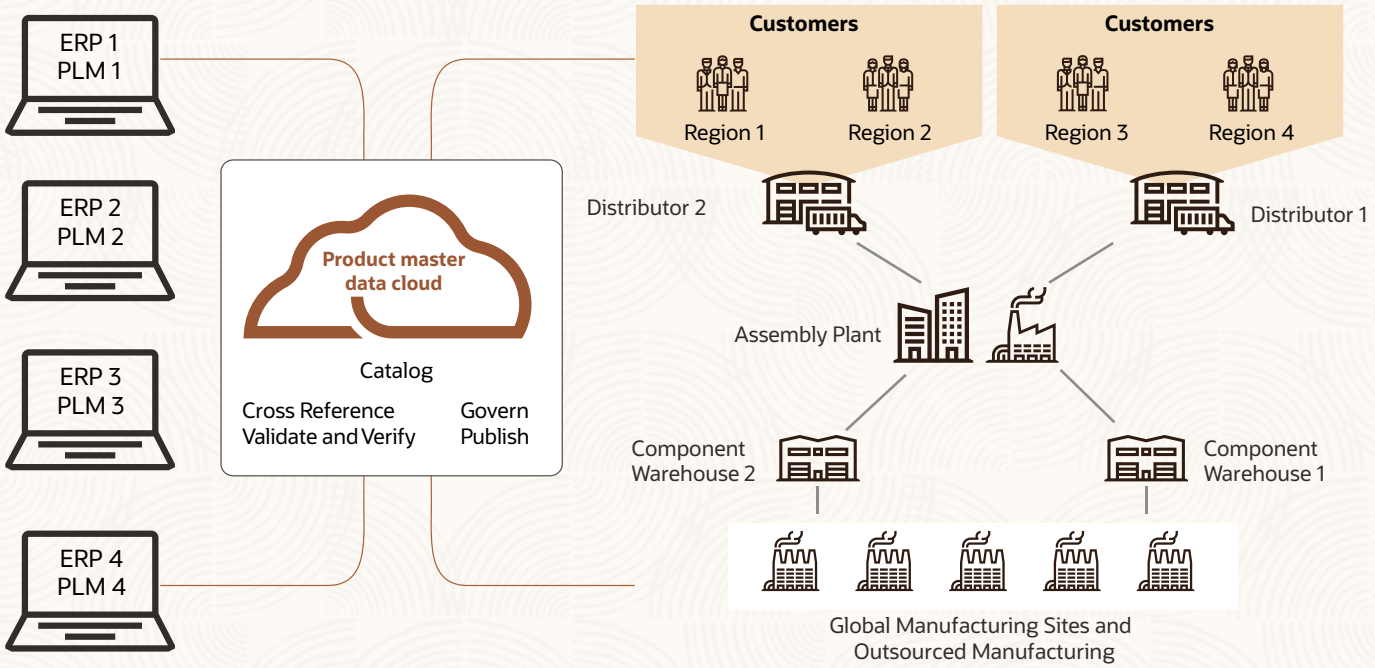
Global manufacturing is often driven by disparate PLM and ERP platforms



As the figure above shows, when there are multiple PLM and ERP solutions releasing content to multiple global manufacturing sites and outsourced manufacturers this results in a lack of visibility and reduces efficiency. To see what is being designed and inventoried across the enterprise users need to access each separate ERP, PLM, manufacturing, warehousing, and inventory management solution. Also, separate interfaces must be maintained to integrate these applications (if they are integrated at all).

A better solution is to route all the PLM design and ERP transaction content through a single source that can selectively publish data. Operationalizing and commercializing product data from a single-source product MDM solution can greatly reduce errors and bottlenecks. Not only can data be published to multiple ERPs, but it can also be published in multiple formats, with site-specific attributes, and to outsourced manufacturers.

Ingestion, cross referencing, verification, validation and publication of product master data through a single source of truth out to the supply chain

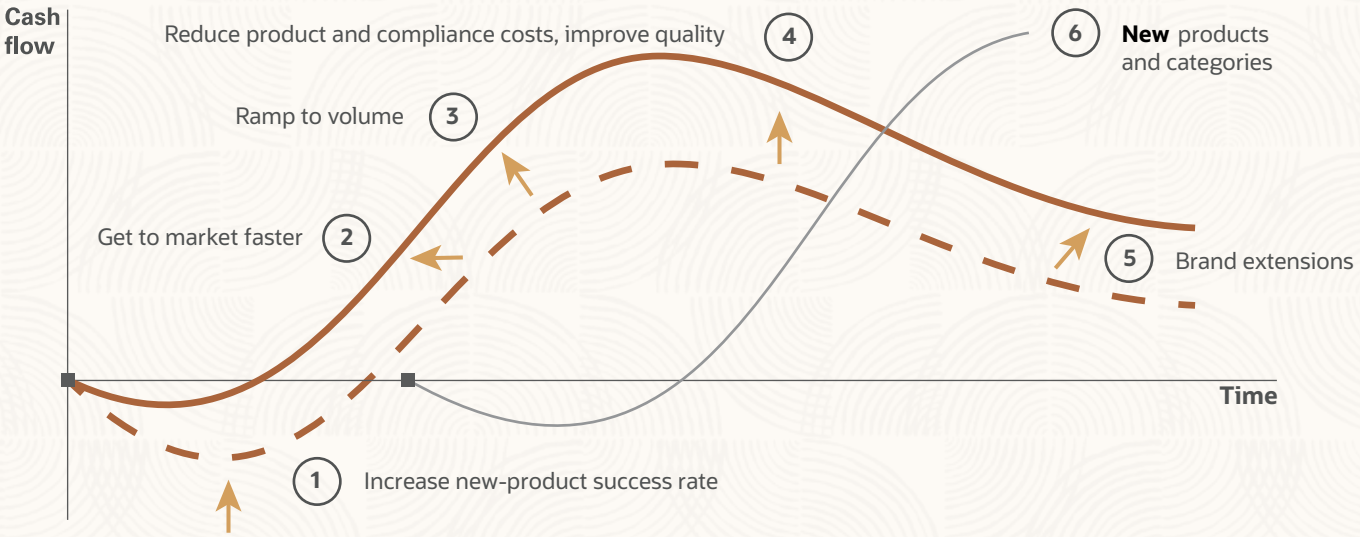


Product data mastery for ideate-to-commercialize

Product development and innovation are key challenges in the industrial manufacturing industry. Product data capture starts very early in the product lifecycle during the ideation phases of a new project. Ideas for new product innovations must be captured and analyzed so that R&D investment decisions can be made. Product design, manufacturing planning and costing processes need to occur very early in the product lifecycle, so product master data must be setup in a rapid and efficient manner. This requires structured new item introduction, governance and change management processes enabled by a product master data management solution.

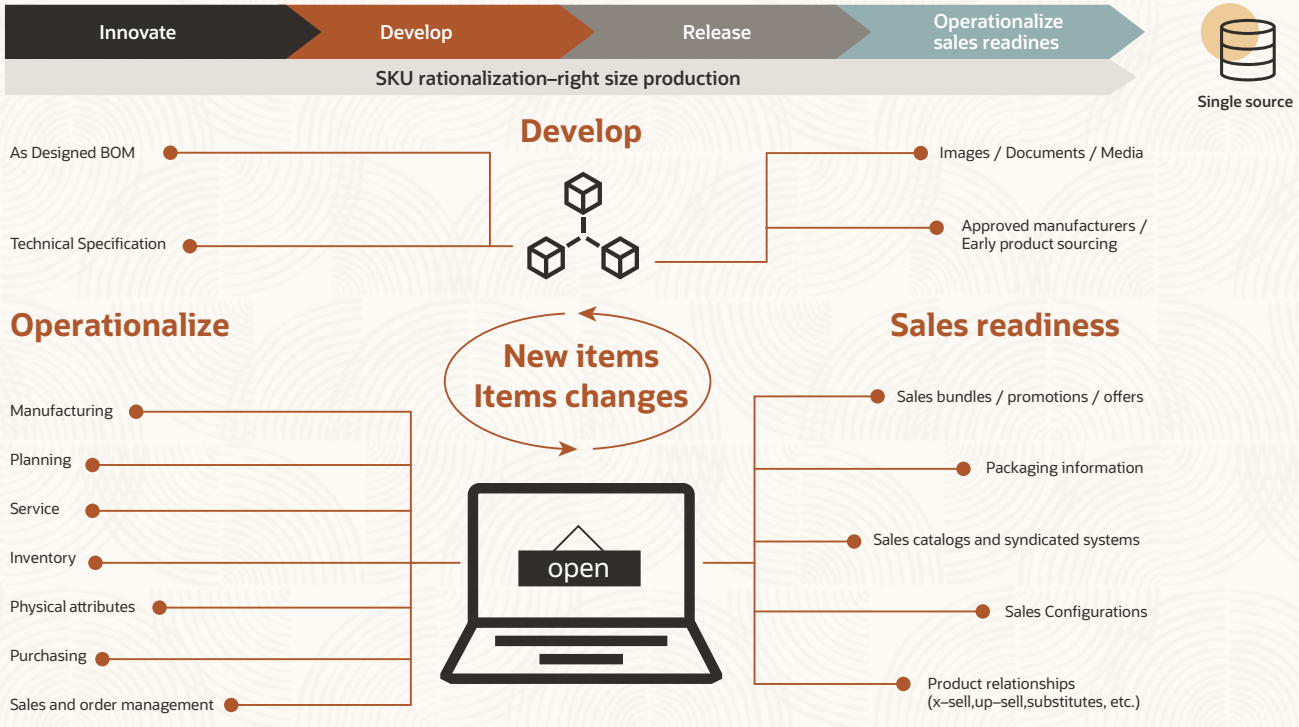
Moving the product lifecycle curve creates significant advantages

The product lifestyle curve



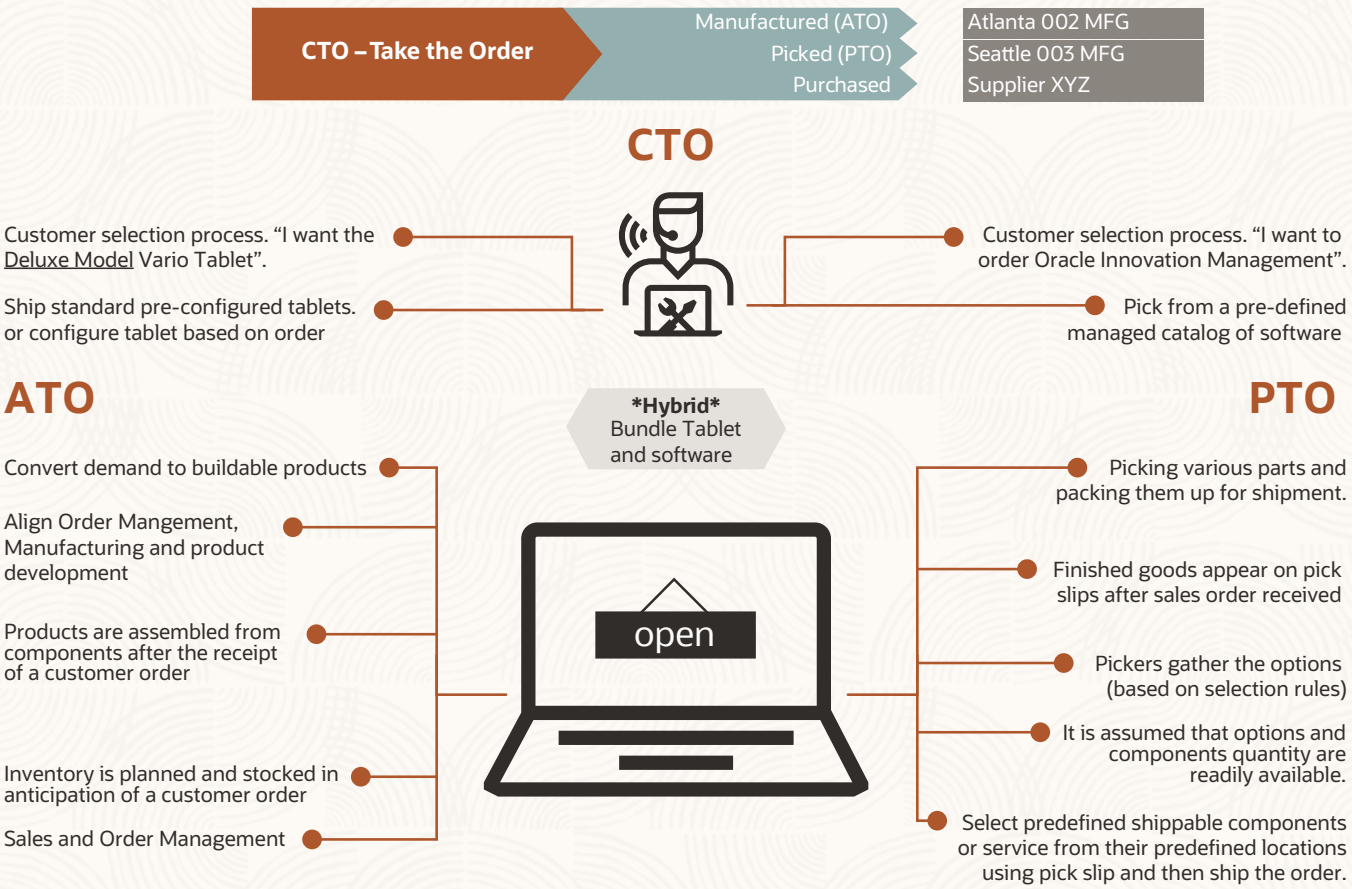
Product data mastery is apparent in the synchronization of information through innovation, product development, release and commercialization. As your product matures through the product lifecycle, more product information is authored. In addition to product data, considerations must be made for change management, information governance, and data quality.

Management of the ideate-to-commercialize process



During the **DEVELOP** phase of the product lifecycle shown in the illustration above, industrial manufacturers often rely on multiple **CAD, PDM** and **PLM** platforms to develop the product definition. Product **MDM** can unify and standardize design data from multiple systems into a single, rationalized product definition. This product definition may include considerations for make-to-stock (MTS), configure-to-order (CTO) and engineer-to-order (ETO) applications.

Industrial manufacturers must often manage multiple modes of product manufacturing



Also, capturing this disparate product and BoM information at a single source means that part data can be more easily re-used for subsequent projects. Catalogs of components can be used to enable reuse of part information. This results in significant cost savings for the business.

Regardless of the path new product data takes within the organization, there must be data verification and validation to prevent expensive engineering change orders, scrapped product or in worse case scenarios, poor quality product entering the marketplace. A single quality issue in a new product release can cause an entire product line to fail, ruin the reputation of a company, and destroy millions of dollars in shareholder value. The data quality checks provided by a product MDM solution help to prevent bad data from flowing to downstream manufacturing and supply chain operations.

Product data mastery for source-to-settle and plan-to-produce

The Source-to-Settle process is especially challenging for industrial manufacturers who manage huge global inventories and produce product around the globe. The ability to create and validate product definitions quickly and route this content to potential suppliers for sourcing is enabled through product MDM. Suppliers may be granted early access to product data, so that they bid on projects and participate in design reviews.

It is important to note that while early supplier collaboration is important, often an issue in industrial manufacturing is that suppliers are being engaged unnecessarily. Inventory and production costs skyrocket because there is no single view into item masters. Very often there is existing inventory or existing production that can be utilized; however, due to a lack of cross reference information, there is no visibility to equivalent inventory or production on a global scale.

In industrial manufacturing commercializing efficiently means quickly ramping up a new product quickly for worldwide production. During the Plan-to-Produce cycle important decisions will be made about how to optimize manufacturing, inventory, and the supply chain based on product data. Global "follow the sun" production and well as outsourced manufacturing make planning even more challenging. The ability to plan accurately based on correct and timely product information is required for accuracy. Manufacturing engineers can take advantage of early product releases to quickly understand how manufacturing resources, routings, work definitions and tooling will be used.

Potential impacts of product data mastery in industrial manufacturing

The potential impact of product data mastery in industrial manufacturing is positive and significant:

- Product strategy development
- Product development cycle time
- Inventory carrying cost
- Profit contribution from new products
- Revenue contribution from new products
- Inventory turns
- Costs from scrap, rework, warranty and returns
- Order fulfillment

Related


Item mastery for the value chain **(Process)**


How an industrial manufacturer streamlined product development **(Customer Success)**


Operations and supply chain **(Role)**


Procurement and inventory supply chain **(Role)**

Retail

The all powerful consumer

Today's consumer is more powerful and educated than ever. They have greater ability to research a product online before buying and demand the ability to purchase products through any channel they want (online, mobile, brick and mortar, catalog). Today's consumers want the option to personalize what they buy and access descriptive information about components, ingredients, materials, labor, and more.

What am I buying?

Consumers now have many questions beyond what a product costs:

- Is this product environmentally friendly?
- Is this product allergen free?
- Is this product organic?
- Where was this product sourced from?
- What chemicals are in this product?
- What is the social impact of this product?

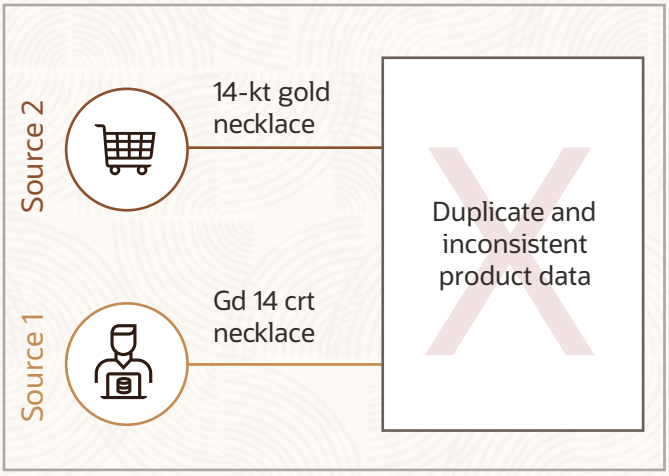
Retailers bear much of the increasing burden from consumers to declare what is in the products they are buying. Product MDM is a requirement for retailers that must manage and publish information about what is in the products they sell. This content can be automatically ingested from their suppliers (CPG companies for example, may use product MDM to manage this information) and published in any format.

Where can I buy it?

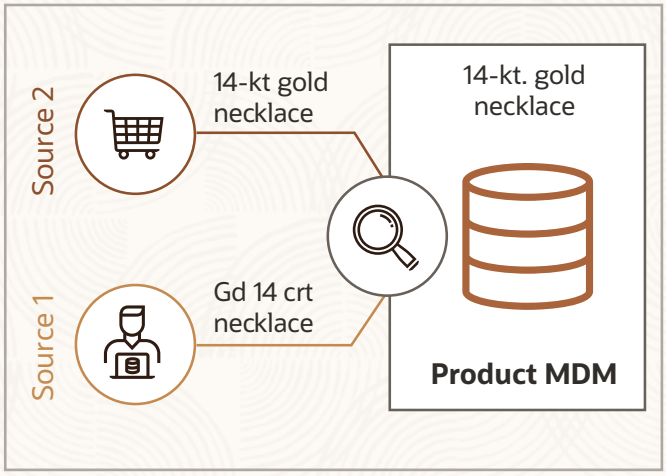
Both Retailers and the CPG organizations they work with must conform to GS1 data registry standards for exchange of product data within the supply chain. The ability to generate, manage and store Global Trade Item Number (GTIN) codes and classifications is a core use-case of a product MDM solution. Other product identifier codes including Universal Product Codes (United States UPC codes) and International Article Numbers (European EAN codes) can also be managed through product MDM. Management of this data is the first basic step in making a product available to consumers.

The real challenge of consumer availability is providing retail support though multiple channels supported by omni-channel commerce. This includes brick-and-mortar locations, online catalogs, print catalogs, and mobile platforms. Even brick-and-mortal locations have increasingly also become pick-up locations for online commerce transactions. Product data mastery means that retailers can manage all of the content and data formats required to manage multiple sales channels for a single product. This product information can include digital assets, descriptions and product hierarchy under full governance and change control. By implementing governance, change management and data quality, retailers can also be assured that customer satisfaction is maintained by providing consumers with correct, detailed product information.

Without product MDM retailers can suffer from duplicate and inconsistent product data



Product MDM enables retailers to classify, catalog and publish consistent product data regardless of the source



Can I customize it?

In some retail markets, customers are demanding more choices for custom products. High tech retail is an early adopter of this philosophy, providing customers with the ability to choose how their laptop or mobile device will be configured for instance. The ability to manage product configuration options, catalogs, and publication of this content to downstream Configure Price Quote (CPQ) applications is a core use case of product MDM.

Potential impacts of product data mastery in retail

The potential impact of product data mastery in retail is positive and significant:

- Customer cross channel buying experience
- Cross channel commerce activities for promotions, pricing, targeting and segmentation
- Store labor from shelf tag and scan errors
- Merchandising and data entry time for new item introduction
- Time spent on invoice disputes related to basic item information
- Warehouse time spent on item discrepancies
- Out-of-stocks
- Inventory carrying costs
- Inbound freight costs
- Speed to market for new items
- Cost per catalogue page

Related

How a high tech retailer tamed its chaotic new product introduction process **(Customer Success)**

Omni-Channel Commerce **(Business Drivers)**

Consumer Packaged Goods

Staggering Numbers...

To a much greater degree than most other industries, CPG organizations must deal with the sheer volume and variations of the products they produce. The math behind some of the potential product variations is staggering:

- An makeup manufacturer that offers 1,000 products for:
  - 10 different skin tones,
  - 6 different product lines,
  - 7 different brand names,
  - Has 420,000 unique SKU's
- A personal care products company that manages 100 brands has just one of these brands that includes:
  - 32,000 active SKU's
  - 1,010 unique custom attributes
  - 60 unique product taxonomy classes
  - 1,431 new product requests in a single quarter
  - 1,732 attribute updates in a single quarter
- A food packaging manufacturing company that issues up to 1,000 new item requests in a week due to frequent logo and ingredient changes from its 200 customers
- A global leading CPG company that sells bottled water must manage 100 specifications for water at a central R&D facility under strict change control and governance

Even a "simple" product like water must meet the demands of today's consumers and regulatory bodies, who want to know:

- What ingredients are in each product and product variation?
- Is this product environmentally friendly?
- Is this product allergen free?
- Is this product organic?
- Where was this product sourced from?
- What chemicals are in this product?
- What is the social impact of this product?
- Is all of the above reflected properly in the product packaging and labeling?

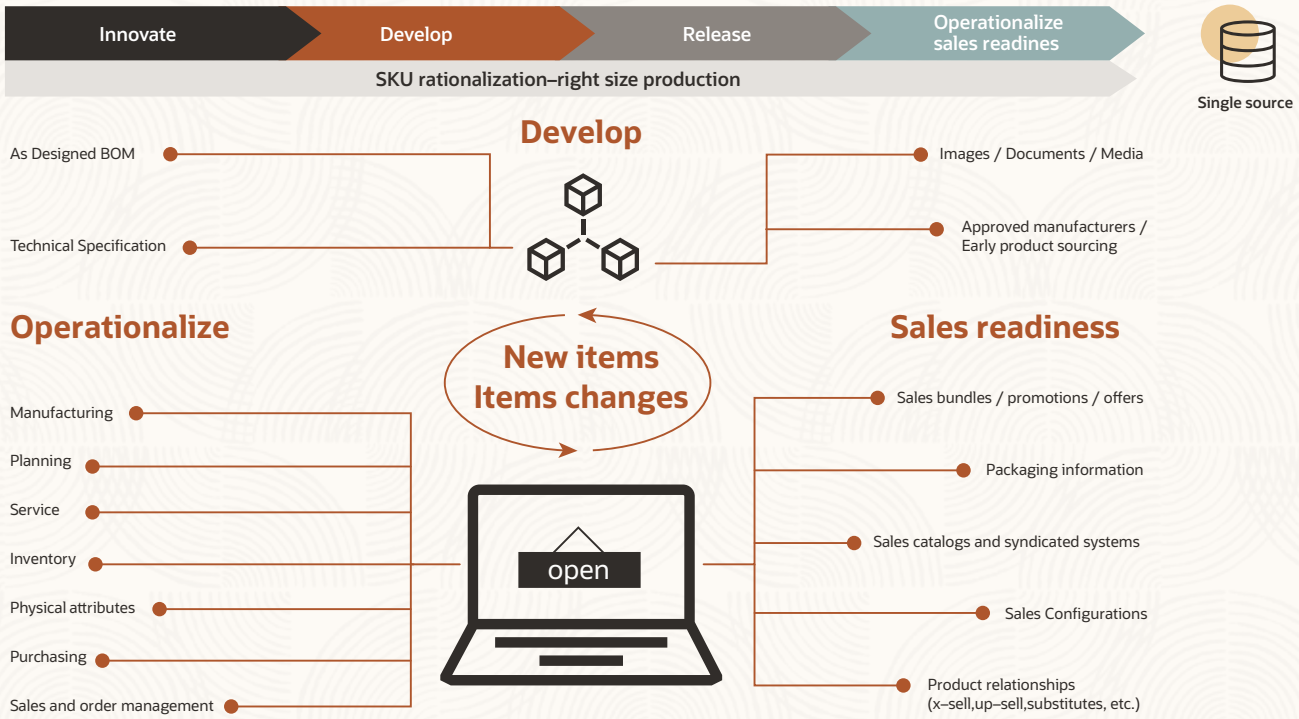
Only an enterprise-level, configurable, flexible, cloud-based product MDM solution can manage this level of product information, variation, and change.

Innovative product and package design

Even a great new consumer product will not draw the attention of the consumer if it doesn't stand out on crowded store shelves – physical or virtual. CPG organizations and their packaging suppliers are constantly working to innovate and improve on unique product/packaging designs. In product design, first-to-market advantages help drive sales. The accompanying package design must maintain product freshness and capture the eye of the consumer. This "arms race" in product/packaging brings the need for streamlined innovation and product development to the forefront. Product/packaging information capture starts very early in the product lifecycle during the ideation phases of a new product/package design. Ideas for new innovations must be captured and analyzed so that R&D investment decisions can be made. Design, manufacturing planning and costing need to occur very early in the product lifecycle, so product master data must be setup in a rapid and efficient manner. This requires structured new item introduction, governance and change management processes enabled by a product MDM solution.

Product MDM enables this by synchronizing information through innovation, product development, release and commercialization. As the product/package matures through the product lifecycle, more information is authored. In addition to product data, considerations must be made for change management, information governance, and data quality.

Management of the ideate-to-commercialize (I2C) process



Product data mastery also enables late stage postponement. With late stage postponement CPG manufacturers can produce generic products early in the product lifecycle before full demand is known. Then, once demand is understood in later stages, the product can be modified and sold. Here the I2C process shown above enables late stage postponement by:

- Operationalizing and providing sales readiness information for a generic, unfinished product before actual demand for finished products is known.
  - For example a clothing manufacturer may manage information for a new designer jacket to be introduced in the upcoming fall season in product MDM. Because the organization doesn't know what the trending fashion colors will be for the fall season, the jacket information will be managed without any color/dye data since it is not known what trending color will be for fall.

Innovation management best practices such as social engagement/monitoring and development of detailed marketing requirements/proposals will be used to understand and meet demand

Once demand for finished products is understood, the specification, supply chain, and unique SKU data can be updated and cataloged in product MDM.

  - Thus, if it decided that orange and brown will be the most in-demand colors for the upcoming fall season, the accompanying product line, hierarchy and catalog content can be updated. The suppliers for orange and brown dye can be immediately engaged directly through the product MDM portal.

Package design variation and volume

Even after the development of a great base product and package design, CPG companies face the unique challenge of having to provide products with more variation and volume than any other industry. This is driven by:

- Language requirements by country
- Variations within a product line—for example, a single line of laundry detergent offered in six different scents
- Unique product offerings by country – for example, a brand of soft drink offered in 10 different flavors, with only 7 of those flavors available in emerging markets
- Rapidly changing packaging artwork and content requirements – for example a product logo or ingredients change

Product MDM is a must have solution for capturing and managing the SKU variation that is introduced by this constant variation and volume.

Packaging and labeling compliance

CPG companies and retailers are being held to an increasingly higher standard for transparency regarding what is in their products. Consumers and global regulatory bodies are applying more pressure to include information about product content, in consumer friendly formats, on product labels. Today, up to 60% of product specifications must be included on product packaging. For example, there are hundreds of global food labeling regulations that cover a range of information including:

- Ingredients
- Nutrition
- Farming practices
- Organic
- GMO
- Genetic modifications
- Safety (food allergy, shelf life)

Product MDM is a must-have solution to be able to govern and approve the labeling compliance information before product is released.

GS1

Both CPG companies and the retailers they work with must conform to GS1 data registry standards for exchange of product data within the supply chain. The ability to manage and store Global Trade Item Number (GTIN) codes and classifications is a core use-case of product MDM. Organizations that manage GS1 related processes effectively see significant improvements in:

- The ability for consumers to search for and find their products online
- Accurate and detailed product info
- Product fulfillment
- Omni-commerce reporting and analytics
- Product safety
- Counterfeit reduction

Potential impacts of product data mastery in CPG

The potential impact of product data mastery in CPG is positive and significant:

- Cross-channel order capture, orchestration, and fulfillment
- Merchandising and data entry time for new item introduction
- Time spent on invoice disputes related to basic item information
- Warehouse time spent on item discrepancies
- Out-of-stocks
- Inventory carrying costs
- Inbound freight costs
- Speed to market for new items
- Cost per catalogue page
- Recall avoidance
- Recall management

Related

How a consumer goods company modernized its supply chain through cloud **(Customer Success)**

How a consumer products company delivers a consistent customer experience **(Customer Success)**

Omni-Channel Commerce **(Business Drivers)**

Customer success stories—paths to product data mastery

How a global pharmaceutical company manages growth

A global pharmaceutical company often went through an ERP migration and consolidation process due to frequent global acquisitions. They ran two different ERP systems internally and products from new acquisitions needed to be consolidated into one of the two ERP systems, based on the market in which they were sold. ERP consolidation was often a time consuming and costly project often worked around upgrade schedules and potential business disruptions. Furthermore, traditional ERP systems did not provide easy ways to load large amounts of product data and did not have ways to validate and capture errors during product upload. They also did not provide the necessary business rule validations, change management workflow and audit trail capabilities for ongoing maintenance to keep the data clean.

With these challenges in mind, this company opted to deploy a product master data management solution in the cloud to simplify the ERP consolidation process and keep the data clean and standardized for ongoing maintenance. When new acquisitions occurred, products from the acquired company were now loaded to the product MDM application first. With fast product upload capabilities and native business rule functions to validate product data, they could ensure products were quickly on-boarded, validated and shared in an efficient and standardized manner. With this approach, they could also abstract the product migration process from their ERP. ERP systems now did not need to be integrated to new data sources and could continue to run the business or go through upgrade cycles independent of migration activities. The product MDM solution could easily on-board product information from new data sources, standardize attribute values, ensure accuracy and publish to the relevant ERP systems leveraging existing integrations.

By building its competency of product data mastery, this organization was able to derive strategic value for its business operations through:

- Significantly reducing costs related to manual upload and maintenance of product data
- Elimination of downstream operational and reporting errors due to inaccurate product data
- Reduction of their cycle time to on-board new products from their ongoing M&A activities.

How a consumer goods company modernized its supply chain through cloud

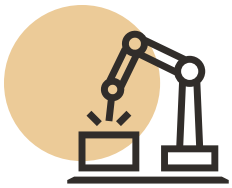
A pet nutrition company experienced the limitations of its ERP system to support the modern demands of its business. They ran their business on a 15 year-old ERP system which lacked the required governance and data quality processes required to keep product data reliable. Data policies were out-of-date, and the system lacked important capabilities such as audit trails, change control and product taxonomy. This made it difficult to meet the demands of their internal users and end customers for keeping their products, classifications, and attributes reliable and up to date. With critical processes relying on product data maintained in their outdated ERP, it was clearly time for an upgrade to establish a better product data management process that could scale and meet current demands.

This company's leaders were new to cloud applications and believedreplacing their entire ERP would have been too disruptive to their business. Instead, they wanted a way to create, maintain and govern product data and then feed clean product information to their existing ERP.

In order to address this challenge, they deployed a cloud-based product MDM application. Deploying the solution in the cloud was a compelling proposition to them for several reasons:

- First, the total cost of ownership for the cloud service was significantly lower than on-premise alternatives.
- Second, deployment and implementation speed was significantly faster with no need to install or manage hardware and associated technology components.
- Third, the ability to eliminate customization and uptake new functionality with no IT intervention increased business agility.
- Finally, it offered a path-to-cloud gateway and provided simple and secure services to easily integrate with their existing on-premise ERP and business intelligence applications.

By building their competency in product data mastery with a cloud-based product MDM application, this company established a best practice approach to product data management without having to disrupt the business with a costly ERP replacement. They defined a product taxonomy, established business rule validations and change management workflows to make sure product data was clean and accurate throughout its lifecycle. With their product MDM solution feeding their on-premise ERP, they estimate data quality has improved by 25% which has helped them reduce downstream operational errors and get to market faster.



How an industrial manufacturer streamlined product development

A company that manufactures padlocks, combination locks and related security products had product data management challenges that significantly affected their product commercialization process. Some of their key businesses objectives were to reduce product time-to-market, meet customer mandates and have full alignment of their product lifecycle management processes from concept to retirement across their enterprise.

A significant roadblock to meeting these objectives was fragmented product data across multiple, non-integrated systems that often disrupted their new product introduction (NPI) process. They effectively used a product lifecycle management (PLM) system to manage their product development process from concept to production release. However, they had challenges translating the hand-off of this data to their ERP and supply chain applications. They had misaligned change management processes and used manual methods to transfer products, Bills-of-Material, item statuses and changes from their PLM to ERP platforms. They also struggled to efficiently aggregate and enrich additional commercial attributes required by their customers.

In order to address their NPI and commercialization processes, they implemented a product MDM solution which easily integrated and worked seamlessly with their PLM system. All processes related to product development, engineering document management and product portfolio management continued to be maintained in their PLM application. Once products were ready for production, they were released to the product MDM solution where all activities related to commercialization took place. They used the MDM application to enrich the released products for supply chain and ERP readiness. They also used the product MDM application to centrally manage attributes required by their customers, enforce business rule validations and publish the relevant information to their ERP, supply chain and GS1 data pool systems.

By building its competency in product data mastery, this industrial manufacturer improved operational efficiency and reduced inventory by $600,000. This was executed through lifecycle and status controls enabled by an integrated product development and commercialization process. By implementing a product MDM solution, the leadership team enabled early enrichment activities to support more efficient operational item setups and commercialization activities. They also leveraged native business rule and data quality functions in their MDM application to establish reliable product data that eliminated the need for cross system validation. Furthermore, by establishing clear differentiation between design data managed in PLM and operational and sales channel related data managed in MDM, they were able to more efficiently support their end-to-end NPI process, reduce time to market and support their customer mandates.

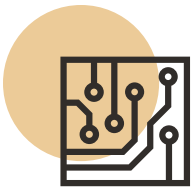
How a consumer products company delivers a consistent customer experience

A global company that offers a line of kitchen tools, food products, and cookbooks was faced with the challenge of delivering a consistent customer experience across channels. With the need to introduce up-to-date recipes and food recommendations to their global customers, this organization went through cyclical product introductions twice a year in five different countries. They delivered their products and services in multiple channels including web and mobile platforms. The process of introducing and commercializing these products across all their channels was supported by 26 applications spanning five different business areas. Riddled with manual and error-prone processes, they experienced high volume calls in their Customer Support Center with noticeably increasing customer dissatisfaction. Lack of data inconsistency across their sales channels including unintended price variations also contributed to lost revenue and high rate of returns.

Realizing the need for maintaining consistent product information across all their channels, they implemented a product MDM system to centrally manage common attributes such as dimensions, color codes and price. They effectively captured, maintained, secured and governed over 300 product attributes, relationships, structures, categories, and documents utilized by several business groups such as sales and marketing, supply chain, procurement, distribution centers and finance. Furthermore, they established a repeatable workflow to simplify communication and coordination of the various business groups involved in the product introduction, commercialization and retirement of products. With all their product master data centralized in one application, they were also able to write reliable reports and enforce business rules to validate the accuracy and completeness of product data at point of data entry. Finally, they were able to make changes in one single application and propagate to all consuming channels including their web, mobile and ERP platforms with no manual intervention.

In a matter of months after implementation of the Product MDM solution, they were able to build their product data mastery competency to where they could completely transfer the product launch process to the business and reduced IT support to practically zero. With business users now fully in control, they were able to successfully launch over 1,500 products. In that short time span, the number of calls to the Customer Support Center during product launch (due to product information mismatches) was reduced from over 2,000 calls to zero. Furthermore, they were able to eliminate redundant and manual changes in multiple applications. By implementing the product MDM solution, they now have all their channels and ERP systems successfully making over 25,000 SOA calls per day during product launch. These systems now automatically receive product changes without manual user intervention. This organization estimated they saved:

- $1,000,000 annually in IT resource reduction
- $2,000,000 annually by reducing product returns from dissatisfied customers
- $500,000 annually in Support Center savings (due to eliminating expenses tied to call processing for product-related discrepancies)



How a high tech retailer tamed its chaotic new product introduction process

A leading provider of telecommunication services struggled with slow and chaotic New Product Introductions (NPI). Manual processes were used to manage thousands of new product introductions throughout a year. Product data including images, descriptions and product hierarchy were stored in 40 disparate systems with no consistency or governance. A lack of automated change management led to incorrect pricing, lost sales, decreased productivity and lack of traceability. Finally, because this company operated in the rapidly moving high-tech telecommunications industry, data security was a key issue. Often, non-disclosure agreements with their suppliers prevented this retailer from receiving early product releases and executing early item setup. New innovations from suppliers were released on an unpredictable, irregular schedule so the company had to be able to rally quickly around new product releases.

Realizing the need to enforce data governance, change management and consistency they implemented a product MDM solution to centralize common attributes into a single application. This was implemented for all retail items across the enterprise. As part of the implementation they introduced automated item numbering, generation of UPC codes, and attribute set-up with business rules to improve consistency and productivity. New item request and change order processes were established to receive, approve and implement SKU requests. Role and item-based security were implemented to protect valuable intellectual property. They deployed a service oriented integration to publish product information to the 40 different systems that relied on this information.

By building the competency for product data mastery, the end result was an organization that was more nimble and able to pivot quickly around an unpredictable NPI schedule. Thousands of successful new product launches have been executed through the product MDM solution since go-live. During the execution of these release processes data quality has improved, workload has decreased, and time-to-launch has been significantly reduced.

Your final checklist to achieve product data mastery

Your checklist to achieve product data mastery

Address the Six Cs

#1 Complexity

Product data mastery concept #1: We must all understand and discuss the information we use every day.

- ☐ Can you map out the product master data landscape within your department/business functions?
- ☐ Can you catalogue the product master data that you author, consume or publish daily?
- ☐ Can you catalogue the processes which use master data?
- ☐ Can you catalogue the systems which use master data?

Example:

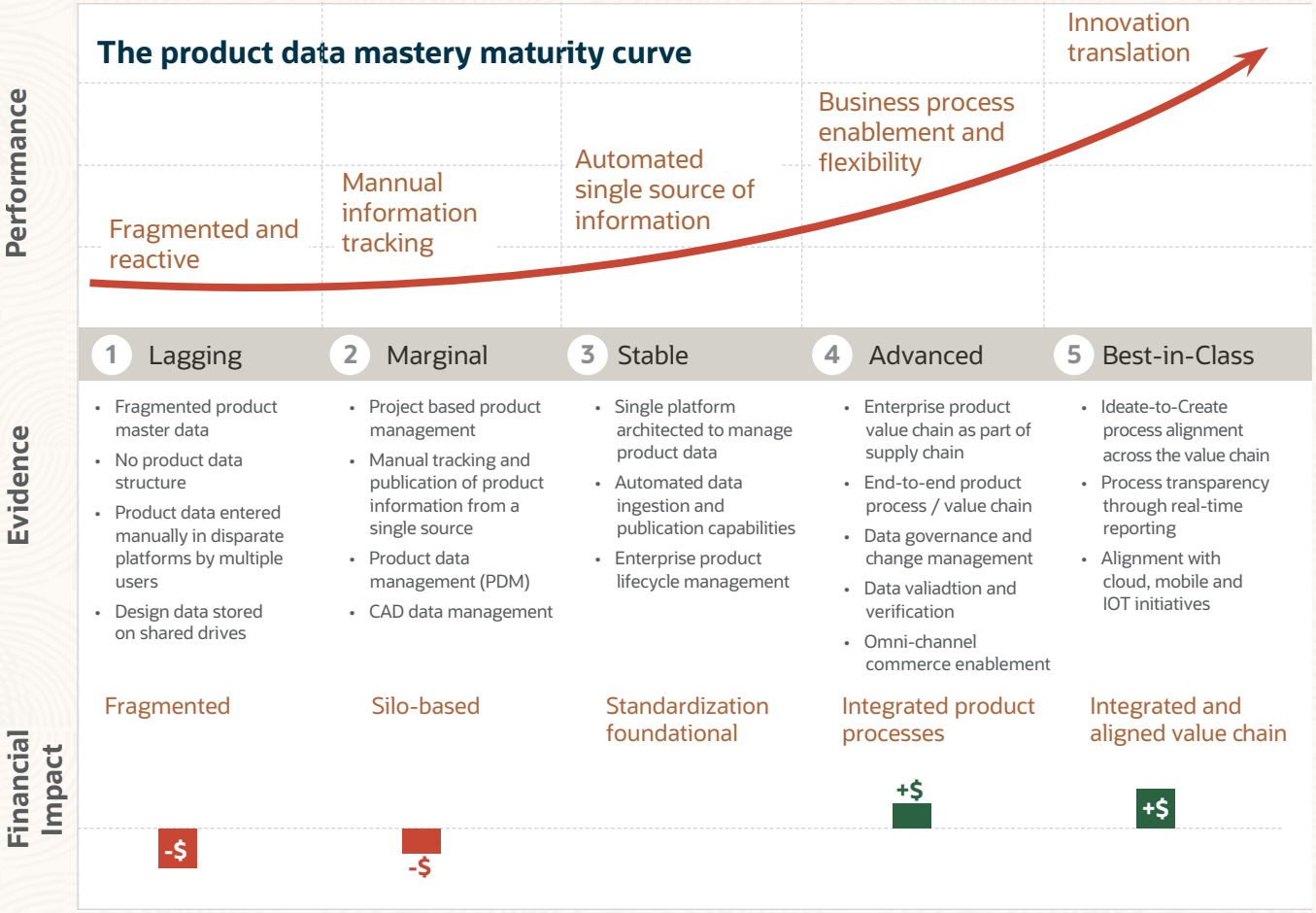
ORG	BUSINESS FUNCTION	BUSINESS PROCESS	#USER	CREATED, CONSUMED, OR PUBLISHED?	DATA DESCRIPTION	ANY REGULATED DATA?	REPORTING?
Engineering	eCAD Design	CAD Data Management and Bill of Material Development	12	Created primarily; some search of existing product data	Drawing Number, Weight, RoHS	REACH, RoHS	ECO Reports
Marketing	Catalog Publish	Formatting of product data for various e-commerce Catalogs	5	Consumed primarily; some data may be added for cataloging purposes. Catalog structure is constantly updated	Catalog hierarchy, descriptive product data		None today; would like commercialization status reports

#2 Commitment

Product mastery concept #2: The organization must commit itself to managing a clean and accurate product master record.

- ☐ Is there agreement among cross-functional leaders that product data mastery will provide significant quantifiable benefit for the business?
- ☐ Is there agreement among the team on your current maturity level of product data mastery (see illustration below)?that you author, consume or publish daily?

The IT organization must understand the company's current product data mastery maturity level and how it impacts your customers



#3 Culture

Product mastery concept #3: Culture is more important that technology or process.

- [ ] Do you have key stakeholders from cross-functional areas of the business engaged?
- [ ] Do you have a chief data officer assigned to oversee this initative?
- [ ] Do you have executive sponsorship?
- [ ] Do you have IT sponsorship?

#4 Cloud

Product mastery concept #4: Champion your organization's cloud strategy.

- [ ] Can you advocate your organization's cloud strategy?
- [ ] Do you have a clear definition of the role product master data management will have in your cloud strategy?

#5 Compliance

Product mastery concept #5: Understand the information compliance requirements for your organization.

- [ ] Have you reviewed your product information ecosystem to understand what information must be specifically managed to meet compliance requirements?
- [ ] Do you know how your product compliance information is managed today?
- [ ] Are there any gaps in your current process or paper-based/manual methods that can be eliminated?information is managed today?

#6 Collaboration

Product mastery concept #6: Collaborate to unlock the unharnessed potential of your product data!

- ☐ Are you collaborating with stakeholders to regularly discuss organizational best practices around:
  - ☐ Data Management?
  - ☐ Data Governance?
  - ☐ Data Security?
  - ☐ Data Reporting?
  - ☐ Data Integration?
- ☐ Do you share this guide with stakeholders to start conversations about the impact of product data on business initiatives, industry requirements and specific roles?
- ☐ Can you calculate an ROI for product data mastery?
- ☐ Have you engaged a business partner that has:
- ☐ Demonstrated market leadership in MDM?
- ☐ Expertise in the business functions and solutions impacted by product MDM, including ERP, SCM, CRM, PLM, etc.?
- ☐ A path-to-cloud roadmap for your organization that can be developed through partnership?
- ☐ The ability to help you determine the ROI for a potential solution?
- ☐ Experience in your industry?

Explore a partnership with Oracle

The challenges of product data mastery are complex, broad and changing quickly. You need an advisor with experience, insight and a demonstrated commitment to innovative solutions.

Explore how a partnership with Oracle could transform your approach to product information management for growth, efficiency, and competitiveness. Unlock the potential of your product master data and processes to seize the right opportunities in a rapidly evolving business and IT landscape.

Visit www.oracle.com/producthub to discover the Oracle Cloud advantage. For a personalized assessment of your product data mastery, contact your local Oracle sales person or call +1.800.633.0738 to speak with an Oracle representative.

Appendix—Glossary

Glossary

Change Control—The discipline of enforcing policy-based approvals for changes that occur on product data. Key aspects of change control include configurable workflows, approvals and audit history.

Data Governance—The overarching intersection of people, processes and technology and involves a closed-loop process to define data standards and policies, monitor data according to those standards and policies and resolve issues. Data governance often dictates policies on the creation, classification, maintenance, quality, security, reporting and lifecycle management of critical data.

Data Quality—The measure of fit and reliability of data for its intended use. Common data quality issues include missing, inconsistent, duplicated, erroneous and outdated data.

Hub and Spoke Systems—An architectural description of how systems share data among each other. The Hub refers to the central application where data from multiple systems is consolidated or cross-referenced in a central repository. In certain deployment scenarios, it may be the only system where data is created or modified by users. Spoke systems refer to the applications that either feed or receive data from the Hub.

Item Master—Centralized management of the item definition that is relied on by core business processes including procurement, manufacturing, inventory, order management, logistics and finance. This leads to most companies describing item information residing in their ERP as their "item master" although the data that is used in ERP may come from other applications including a product master data management or product lifecycle management system.

Master Data Management (MDM)—A combination of people, processes, policies, and tools that help to define, aggregate, maintain, cross-reference and use consistent data across various enterprise functions. Common master data domains include Products, Customers, Suppliers and Sites.

New Item Creation Process—A series of steps for an item to be defined and enriched by relevant stakeholders before it can be approved for broader use.

Oracle Product Hub Cloud—The cloud-based product master data management solution offering from Oracle. Oracle Product Hub Cloud helps organizations consolidate, enrich, govern and share product information to simplify the item master, support path-to-cloud strategies, accelerate commercialization, enable omni-channel commerce, and improve contract manufacturing for companies in high tech, life sciences, retail, industrial manufacturing and consumer goods industries.

Product Catalog—A collection or categorization of products grouped for a specific business function (e.g., Web Catalog, Print Catalog, Reporting Catalog, etc.). Catalogs are often made up of flat or hierarchical categories that serve to group products in a more granular fashion.

Product Commercialization—Often refers to a stage after product development where a product goes through the required steps to make the product available for commerce. It usually encompasses processes that include production, sales and marketing, omni-channel commerce, order management and service.

Product Data Management (PDM)—A business process within PLM that focuses on the management of design centric product data. Version and revision control of technical documents, Mechanical, and Electrical Computer Aided Design files (MCAD/ECAD) is foundational PDM functionality.

Product Data Mastery—An organization's competency to make the right product information available at the right time to the right people for

the best possible business outcome. Product data mastery is a strategic approach to managing product information that is enabled by executive sponsorship, organizational alignment and in part by the enterprise solution set called product master data management (MDM), which is also referred to as product information management (PIM).

Product Development—The initial process of managing and developing products prior to introducing or mass producing them in the market. A product development process can be used to introduce brand new products or improve existing products that already exist in the market. Product development may include the use of PLM and PDM solutions to manage initial design data.

Product Information Management (PIM)—While often used interchangeably with product master data management, product information management primarily focuses on managing product data for purposes of marketing, selling or fulfilling products in different channels. See also product master data management

Product Lifecycle Management (PLM)—The process of managing the entire lifecycle of a product from inception, through engineering design and manufacture, to service and disposal.

Product Master Data—The common characteristics of a product which are agreed on and shared across multiple systems and business processes in an enterprise. Product Master Data is usually non-transactional data about a product.

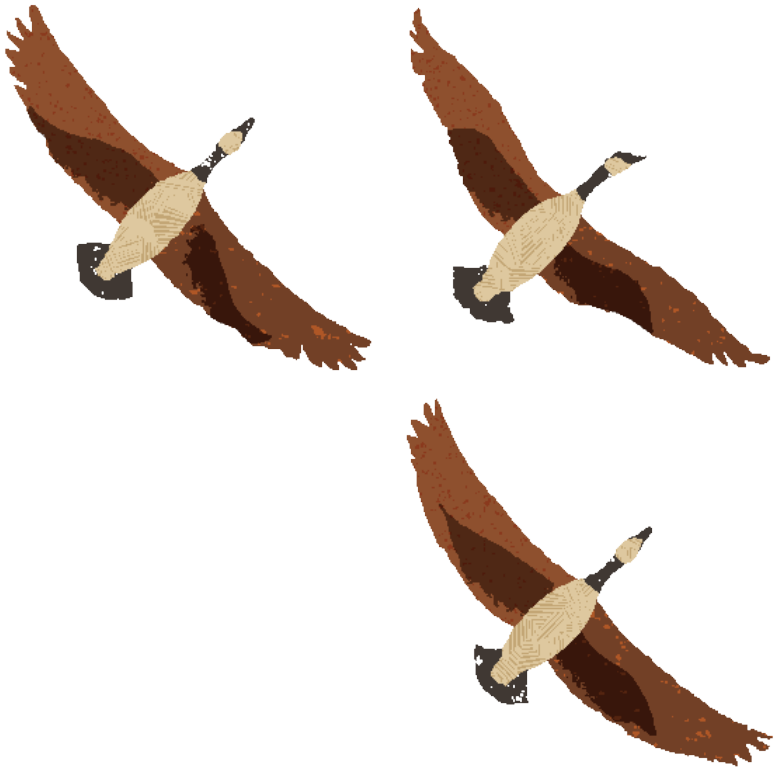
Product Master Data Management (Product MDM)—An enterprise solution set that helps an organization build its product data mastery when leveraged as part of a strategic approach to better manage product information. Product MDM solutions enable product data management, government, security, reporting and integration best practices to establish a single source of clean and accurate product information for an enterprise. See also product information management

Product Relationship—A formal relationship defined between one or more products for purposes of driving a specific business function. For example, up-sell and cross-sell relationships drive product sales while substitute and superseded relationships can drive fulfillment of those products.

Product Taxonomy—A hierarchical classification of products that often describes the meaning and characteristics of a product. Product taxonomy is also known as product classification.

Supply Chain Management (SCM)—An enterprise solution set that improves supply chain business processes such as procure-to-pay, configure-price-quote, source-to-settle, and order-to-cash for driving growth, reducing cost, and creating business advantage.

Trading Partner Items—Item identifiers used by trading partners or external parties to identify an item or product. Trading Partner Items can include Supplier Items, Manufacturer Part Numbers, Customer Items and Competitor Items.



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